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Marpessa, an able 50-foot Mathis cruiser, which does yeoman service as a fast ferry between New York and Lloyd Neck. Her owner, W. J. Matheson, whether using her for pleasure or business, derives the fullest amount of satisfaction from her and banks on the 25-mile speed which her two Van Blercks give

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October, 1916

**MOTOR
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THE BOAT THAT DID MOST TO SHOW THE ADVANTAGES AND USEFULNESS OF MOTOR CRUISERS IN NAVAL WARFARE



The "SUNBEAM II," Robert B. Roosevelt, owner

The common sense, medium speed cruiser which won first honors and made a remarkable performance with an amateur crew in the manoeuvres of the battleships in connection with the Naval Training Cruise. Another proof of our common sense "Speedway" boats, versus extreme speed, unstableness, cramped deck and cabin quarters. It is not our purpose to guarantee a "burst of speed"—"Speedway" boats always win in service.

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Speedway

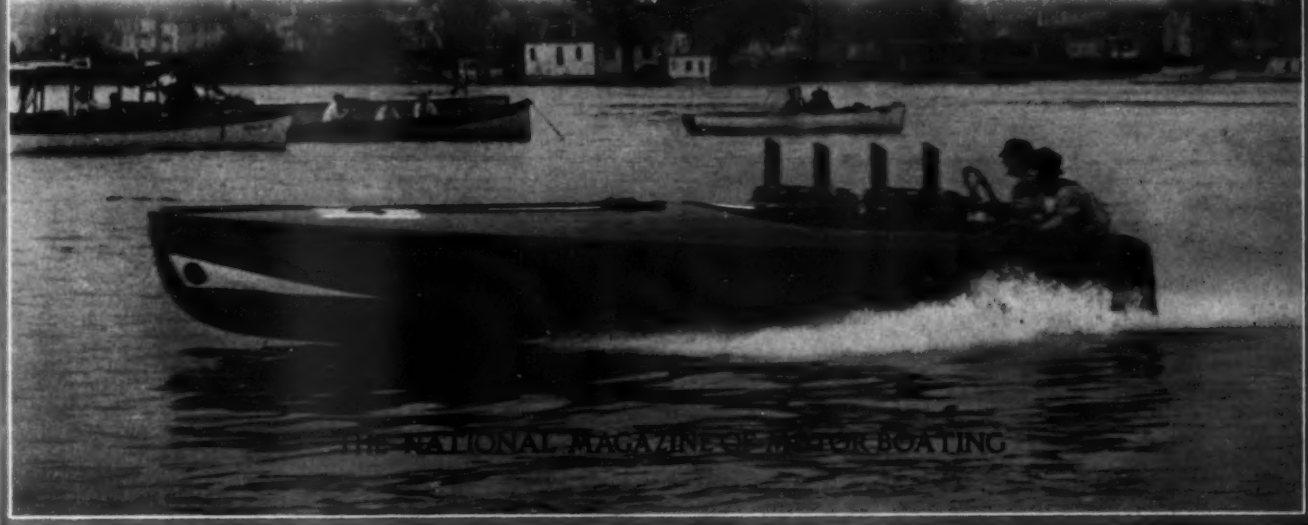


Speedway



WRITE FOR DETAILS ON OUR NEW SCOUT CRUISER DESIGNS.

MOTOR BOATING



Miss Minneapolis, winner of the A. P. B. A. Gold Challenge Cup and the One-Mile Trophy. In the race for the former, her best speed for 30 nautical miles was 50 statute miles per hour, while her average for the six one-nautical mile dashes was 61.083 statute miles per hour. Her best one-mile dash down stream was at the rate of 63.578 miles per hour, which makes Miss Minneapolis without question the fastest boat afloat today. She was built and designed by the C. C. Smith Boat and Engine Co., and is powered with one 250 h.p. Sterling motor

Taking the Gold Cup to Minneapolis

Several New Speed Records Established in the Most Successful Races Ever Held for the A. P. B. A. Classic Trophy—Detroit Proves an Ideal Location for High Speed Racing

By Charles F. Chapman

JUST a year ago a mere handful of Westerners came down to Manhasset Bay on Long Island Sound with an almost unheard of little hydroplane known as Miss Detroit. While these men were few in number, they directly represented perhaps a thousand souls and indirectly nearly a million. For Miss Detroit was built by popular subscription, each of the thousand - odd persons interested contributing from \$5 up toward the cost of building, equipping and maintaining a speed boat which would beat anything afloat. Although their approach to Manhasset Bay was not heralded with such wildcat reports of 80- or 90-mile speeds as often precede such a venture, there was a certain feeling of unrest in the Easterners' camp

when she made her appearance, and the cause of their worry was well founded, as later results showed.

It will be remembered that Miss Detroit started in a field of thirteen entries of which eight started, five finished the first day, three the second, while only two completed the three days' events, Miss Detroit's average speed being 41.4

miles an hour for the 90 nautical miles. When accepting the cup Dr. Crevier, the secretary of the Miss Detroit Power Boat Association, said it was the proudest moment of his life, and that every citizen of Detroit would feel honored by Miss Detroit's victory and would turn out to welcome the motor boating world in 1916 when the races would be held in his home town. The secretary

Fourteenth Race for the American Power Boat Association Gold Challenge Cup—Detroit River, Sept. 2, 4 and 5, 1916 (3 heats; 30 nautical miles each)

WINNING BOAT, 1916		1915 WINNER	
	TIME	TIME	STAT. M.P.H.
First heat, Miss Minneapolis.....	44:41	42:41	48.5*
Second heat, Miss Minneapolis.....	41:46	43:57	47.0*
Third heat, Miss Detroit.....	41:20	1:03:35	32.6*
Total race, Miss Minneapolis.....	2:07:48	2:30:13	41.4*

Fastest Lap (5 nautical miles)

First heat, Miss Minneapolis.....	6:44	51.20	6:57	49.52*
Second heat, Baby Marold.....	6:14	55.35	6:54	50.01*
Third heat, Miss Minneapolis.....	6:11	55.78	9:31	36.20*

*Miss Detroit won each heat and made the fastest lap of each, in 1915.

Gold Cup Record for One Heat of 30 Nautical Miles

Made by Baby Speed Demon II at Lake George in 1914—Time, 41:03; Speed, 50.49 stat. m.p.h.

Gold Cup Record for Three Heats, 90 Nautical Miles

Made by Baby Speed Demon II at Lake George in 1914—Time, 2:06:35; Speed, 49.12 stat. m.p.h.

Disturber IV's Record

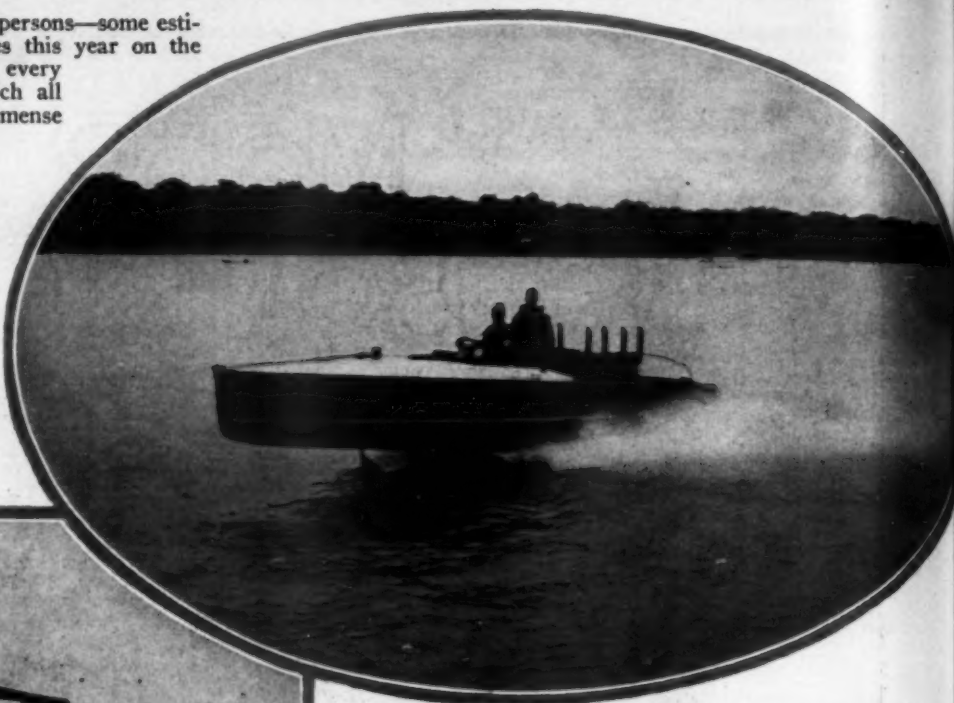
Fastest Race at Chicago, 1915, 54.326 m.p.h. Fastest Lap, 54.90 m.p.h.

Third Race for the A. P. B. A. Mile Championship of North America and Challenge Cup—Detroit River, Sept. 6, 1916 (1 nautical mile)

Average of Six Runs, 1916		Best Previous A. P. B. A. Record	
Miss Minneapolis.....	53.116 knots = 61.083 stat. m.p.h.	Tech Jr. (1915).....	53.7 stat. m.p.h.
Best One of Six Runs, 1916		Best Previous A. P. B. A. Record	
Miss Minneapolis.....	55.285 knots = 63.578 stat. m.p.h.	Tech Jr. (1915).....	54.465 stat. m.p.h.
Best Previous World's Record (Average Six One-Half Mile Runs)		Best Previous World's Record (One One-Half Mile Dash)	
Disturber IV (1915).....	53.00 knots = 60.77 stat. m.p.h.	Disturber IV (1915).....	61.503 stat. m.p.h.

spoke the truth, for no fewer than 200,000 persons—some estimates are even higher—watched the races this year on the Detroit River from craft anchored along every inch of the course, and from banks which all but encircled it and which proved one immense grandstand where the public could see the hydroplanes at close range as they darted around without even as much worry as an admission fee. The welcome which the Detroiters gave the visiting motor boatmen has never been equalled in the history of the sport—they simply owned the town and they had but to express a wish and it was carried out.

But while these members of the Miss Detroit Power Boat Association were planning and preparing for their regatta, their champion lay neatly covered up in one corner of Smith's shop at Algonac,



Hard luck as usual followed Peter Pan VII. In the first 30-mile heat this boat started 1 minute, 41 seconds late, but reached the finish line in second place, only 14 seconds behind the winner. In the second heat Peter Pan was nosed out by Miss Detroit after running a neck-to-neck race with her for 25 miles. In the third heat something went wrong and Peter did not finish.



Betty M. II, winner of the first heat of the express cruiser trophy. Just before the start of the second heat this boat was rammed by Venetian Maid and so badly damaged that the race committee was obliged to postpone the remaining heats indefinitely.



The finish of the third and final heat, Miss Detroit leading Miss Minneapolis by one second in the fastest race of the three days.

Deed of Gift governing the Gold Cup, must have supervision over the race itself, reached Detroit, we were impressed with the completeness and exactness of the Detroiters' plans. While it was their first attempt at anything founded along Eastern lines, not one of them has any reason to feel ashamed over a single detail—from the standpoint of racer, visitor, spectator or anyone else.

Months before the days

The last chapter in Baby Ma-reld's meteoric career. On the second day of racing, after establishing a world's record for a lap of five miles, she caught fire and sank.

and to those who know we need not repeat that champions are not made in this way.

Another little town even further removed from the briny deep than Detroit is, and goodness knows that is far enough, had been silently looking on, digesting all that Detroit had done the year before, but profiting by her experiences. "Was it possible that the Eastern yachtsmen would permit the coveted trophy to get farther from their grasp?" they argued among themselves, or was Detroit's win in 1915 just a fluke. But they surmised, at least, that what one Western city could do was not impossible for another, and after all Detroit was really in the East, comparatively speaking, the Minneapolians claimed. And so it was that Minneapolis was raised by public subscriptions, some large and others smaller, but all of them given with just as much feeling and pride, for the donors were sure that their boat would win, although they had only seen the plans of her at the time. And if she should win it would mean that every racing event of any importance would be held in Minneapolis in 1917.

The subscribers formed themselves into the Minneapolis Boat Association, and as membership in the A. P. B. A. was necessary before they could compete for the Gold Cup, they applied to be admitted. They were unanimously elected to membership which gave the A. P. B. A. its first club in the Northwest. Now the association is proud of its youngest baby.

As soon as we of the A. P. B. A., who, according to the

set for the race, J. Lee Barrett, the present secretary of the M. D. P. B. A., had started the ball rolling under the guidance of his commodore, A. A. Schantz. With such able assistants as A. A. Templeton as Chairman of the Race Committee, Commodore Charles W. Kotcher looking after the visiting ladies, Commodore Barthel as Chairman of the Regatta Committee, ex-President Herman T. Koerner of the A. P. B. A. as Chief Judge and Fred R. Still acting as general all-around handy man, having general charge and supervision of everything, is it any wonder that everything went off with clock-like regularity, precision and smoothness? The A. P. B. A. was represented by Commodore G. C. Krusen, of Philadelphia; Frederick K. Lord, of New York, and the writer.

The course was five nautical miles in length, correct to the inch, checked and rechecked every day of the racing. It was located between Belle Isle and the Detroit shore, just above the bridge leading to the island. It was, therefore, pro-





Hawk Eye, owned and driven by Commodore Albert L. Judson, president of the American Power Boat Association. For consistent running no boat equalled the performance of Hawk Eye, and while she was not very fast on the spurts, yet she finished the series in third place



A stern view of Baby Marold, taken during one of her few runs on the Detroit River. This boat was powered with one twelve-cylinder motor of about 600 h.p., and made one five-mile lap at the rate of 55.35 statute miles per hour

tected from bad seas as well as from commercial traffic. Its shape was irregular owing to the fact that it was necessary to extend it quite a ways up the river to get the necessary five miles and to avoid a number of shoal spots. Consequently fast time was not possible, yet

Miss Detroit's best five-mile lap was at the rate of 51.0 miles per hour, while at Manhasset last year her fastest lap was only 50.01 miles per hour. The course was excellently buoyed both inside and out. The upper and lower turns were easy ones with three buoys, and in addition there were buoys placed at frequent intervals along the whole course. The outer boundary was also marked by a series of buoys which allowed the spectators to know how near they might approach without interfering. The U. S. Coast Guard Service, under Capt. Carmine, of the cutter Morrell, was responsible for this part of the arrangements.

The patrolling could not have been better. Commodore Frasier, of the Del Rey Motor Boat Club, was assisted by numerous members of his own club, the Detroit Yacht Club and the Detroit Boat Club. The officers and crew of the U. S. C. G. C. Morrell did yeoman's service as well.

Although in 1915 there were thirteen entries while Detroit had only seven, yet at the former races there was only a total of ten finishers in the three days, and in this year's races twelve boats successfully completed the 30-mile course in the three days. From this standpoint the Manhasset races showed only 16 per cent. of the total finishes possible, while at Detroit the record was 57 per cent. This is an indication, we believe, that the sport of racing high-speed craft is in a much healthier condition than it was a year ago with power plants more reliable, notwithstanding the fact that speeds have gone up

(Continued on page 56)



The committee largely responsible for the success of the Gold Cup Races. Left to right: W. E. Metzger, representing the Miss Detroit Power Boat Association on the Committee of Judges; Commodore Schantz, of the M. D. F. B. A.; Commodore Gould, of Chicago; Ex-President H. T. Kooner, of Buffalo, N. Y.; Commodore Barthel, of Detroit; Commodore G. C. Krusen, of Philadelphia; Commodore Egan, of Buffalo, and Timer Sampson, N. Y. Y. C.

Go South, Where It's

By Paul

Photographs by

Florida Holds Forth Her Perennial Lure, and October Sees a Host of Motor Boatmen Obeying Her Imperious Summons

WHILE easy for the most part, the southern route to New York is one which presents various kinds of navigation, and there are no doubt many who may use some of the following suggestions to advantage.

After seeing some of the hundreds of boats which have made this interesting southern trip, I have come to the conclusion that nearly any boat can make it, but I would advise, nevertheless, a raised-deck cruiser of about 3-foot draft. Every inch counts down that way, and although boats drawing up to four feet can make the run, they have a hard time getting through some places. A good reliable power plant of the non-stop type is necessary, speed not being as important as reliability.

The start from New York is best made in the first few days of October, the usual September blow on the Chesapeake being then over and the weather generally settled. Don't start out half equipped, and by all means have a complete set of Government charts as well as the Coast Pilots which cover the distance, and the Inside Route



Besides the many coastwise canals, several have been dug into the Everglades. Entrance to one of the latter terminating at Miami

Pilot. A reliable compass is a necessity, as several courses range from twenty to fifty miles, and I would advise a battery of three anchors with about 200 feet of line to each anchor. A heavy, a medium and a light anchor will cover all situations, and the lightest which is the most easily handled will be found sufficient for ordinary service. All steering gear should be in the best of order and any doubt of its condition should be eliminated before starting. This applies also to the motor, reverse gear, coil, magneto, etc., as at times you will be many miles from any kind of a repair shop, and the wear and tear half way to Florida is equal to that of two or three years' cruising in Northern waters.

It is a good plan to sheathe the bottom of the keel with sheet copper. Owing to the

many bars it is practically impossible to keep paint on the bottom, but by turning the copper up about two and a half inches on each side and using some good copper paint up to the waterline the danger of picking up worms will be eliminated. Twenty-two gauge copper is easy to handle and can be bought in almost any length and width desired. The tacks should be spaced about one

As Suez is the meeting place of Florida the rendezvous of the plea is no unusual thing to see motor from widely separated points on from the Great Lakes and inland

and a half inches, but start the work by tacking every six inches, then dividing each space to three and finishing at one and a half. By so doing you will have no gaps.

It is well to have aboard a couple of ash poles of about 14-foot length. Several boat companies sell them for about five cents a foot. These poles come



A short stretch of the Ocklawaha River, a tributary of the St. Johns. In places the moss-covered trees almost touch overhead

Summer in Winter!

C. Warde

C. F. Chapman

Points of Interest and Information of Value on the Inside Route to Jacksonville With the Promise of More to Come

purpose and can be shaken out and stowed away after you have passed out of the Albermarle and Chesapeake Canal, as you will have no more locks going south.

The Delaware and Raritan Canal is forty-four statute miles long and has thirteen locks. A draft of 7 feet is permitted and a toll of \$6.50 is collected for pleasure boats up to 50 feet. Clearance papers are obtained at the first lock at New Brunswick and are given up at Bordentown on entering the Delaware River. There is a speed limit of $4\frac{1}{2}$ miles per hour, but the average motor boat is not held strictly to this speed. Owing to the many bridges which are sometimes not lighted, night running is difficult, but good tie-up places are found at most of the towns passed through. This canal is closed Sundays.

If you start down the Delaware from Bordentown on the first of the ebb tide you can carry it all the way to Delaware City. This tide is very strong in places and makes a big difference on the run of sixty-nine miles. The Chesapeake and Delaware Canal is thirteen and a half miles long and has three locks. A toll of \$4

the East, so are the waterways of sure craft of the United States. It boats assembled at one anchorage the Atlantic and Pacific coasts and rivers as well

in handy when working into the locks and pushing off, and when she is tied up to a canal bank they can be used to hold the boat off by tying a short line on one end and pushing the other into the mud.

An ordinary bamboo fish pole makes the very best kind of sounding apparatus, and by

WARNING
TOLL CHAIN
AHEAD
STOP-LANDING

One would have to pass this warning in the dark to avoid seeing it—and night-running in Floridian shallows isn't being done this year.

attaching a piece of cotton cord three feet from the large end and then two pieces three feet from that you will have a rig which is superior to the usual lead line and much faster. However, have a lead and line aboard for deep water, as you will have use for that also. Provide yourself with six to eight good fenders for use in the canal locks. Sacks filled with straw make fine fenders for this

is collected at the entrance and the speed limit is $4\frac{1}{2}$ miles per hour, several boats having been fined for breaking this limit. If you arrive at Chesapeake City at the end of the day's run tie up at the right side of the basin for the night. From here most boats going south run to Annapolis, which is about fifty-six miles distant. Electric cars run from Annapolis to Baltimore in case you wish to visit the latter city.

Solomon's Island on the Patuxent River is usually the next jump—about fifty miles—and a run from here of another forty miles brings you to Readville on the Great Wicomico. An alternative stopping place is the harbor behind North Point which is fifteen miles further and which lies about fifty-five miles from Nor-

(Continued on page 54)



A stern wheeler, characteristic of certain waters of Florida. Weeds, floating submerged, and shallow draft have no terrors for her

Practical Wireless for Motor Boats

On the Aerial Depends the Efficiency of the Outfit, and So Its Correct Installation Is of Primary Importance—Details of Its Arrangements—Résumé of Wireless Laws

By A. C. Lescarboua

PART TWO

THE first consideration in installing a wireless set on board a motor boat is the aerial, as well as its complement, the ground connection. For a good aerial is the very foundation of a successful wireless installation, and, while a poor antenna will give perhaps fair results with an excellent receiving and transmitting set, the results will be ever so much better if the aerial is of the proper kind to begin with.

Conditions favor the wireless installation on shipboard. While on land an aerial must be of a fair height and span in order to cover a range of fifty to a hundred miles with a transmitting set, on water the same range can be secured with a much smaller and lower aerial. For one thing, the aerial on shipboard is not surrounded by shielding structures or natural obstacles, as is often the case with the land station. Then again the "ground" or earth connection of a station on board a ship is nearly perfect, especially in the case of salt water. There are, no doubt, other reasons for the marked advantages of a ship station over its counterpart on land, but those just mentioned are the most obvious and logical.

There are a number of factors that must be considered in erecting an aerial on board a motor boat. Perhaps the foremost of these are of the mechanical variety, for the aerial must be of such a design as will best suit the architecture of the craft on which it is to be used. It must make use of such masts as already exist on board, if possible; it must not detract from the otherwise attractive appearance of the boat, and the system of wires must not be in the way. The mechanical considerations once met, it is necessary to take up the electrical ones, which are covered at length in the advice that follows on the erection of aerials. The one point that the boat owner should bear in mind in erecting an aerial is that it must be of such construction as to insure the maximum efficiency consistent with the mechanical limitations encountered.

Considering first the mechanical factors in installing an aerial, we come to the subject of supports or masts for the network of wires. Fortunate, indeed, is the boat owner whose craft boasts of two masts of about equal height, although the owner of a single-masted craft need not despair. Obviously, however, the better results will rest with the boat that has the two masts of equal height, although much can be done to improve the condition of the single-master. In the accompanying illustrations are shown the arrangement of an aerial for a two-masted craft, and one for a single-master. In the former case the aerial is simply strung between the two supports, while in the latter it is supported between the single mast and a small flagpole either at the prow or stern

[As it is next to impossible to lay down a set of general instructions that will cover every case, the readers of MoToR BoatinG are invited to acquaint us with their own particular problems of wireless installation, addressing their inquiries to the Radio Editor. We shall be glad to render what service we can in answering questions of this nature which may arise.—Editor.]



The arrangement of the aerial on a two-master, showing that wireless is entirely practicable for the smaller motor vessels. In the case of auxiliaries the employment of a snap hook will make it possible to disconnect the lead-in wires when it is desired to use the sails

of the vessel, depending upon which choice offers the greater span.

The wavelength of the aerial is an important consideration only if it is to be employed for sending as well as receiving. If such is the case, then it is imperative to exercise care in order that the so-called fundamental or natural wavelength of the aerial, that is, the length of wave it will respond to without supplementary tuning devices of any kind—the inherent wavelengths, as it were—will come within the 200 meters limit set down by law for amateur communication. And this is not as difficult as it might seem; the builder of the aerial has only to avoid erecting an aerial that has a span and leading-down wires aggregating over 120 to 125 feet in length. It becomes immediately evident that on the

average motor boat the aerial available can be erected without any possible chance of its exceeding the 200-meter fundamental or natural wavelength. However, in instances where the craft is of a size sufficient to allow the erection of system that exceeds the 120 to 125 feet limit, this is readily taken care of.

In the case of small boats where the natural wavelength of the aerial is sure to be within the requirements of the radio laws, the aerial should be of the inverted L type; that is to say, the leading-down wires, or "lead-in" wires as they are termed, are tapped to either end of the aerial proper, as shown in one of the accompanying illustrations. In the instance of a large boat, where it is immediately evident that the combined span and lead-in wires will exceed the 120 to 125 feet limit, the aerial should be of the T type, in which case the lead-in wires are tapped to the exact center of the aerial proper. In the case of an inclined aerial of the L type, the lead-in may be taken from either end, although the upper end is perhaps the preferable. In the case of a horizontal L aerial, the lead-in should be taken off whichever end brings down the wires nearest to the position of the apparatus.

Of course, the higher an aerial is supported, the better the results attained. However, if possible, every effort should be made to have the aerial on shipboard twenty-five feet high or more at least at one point, if not throughout its length. In the event of the existing mast or masts being of less height than twenty-five feet, the boat owner should add another section of suitable size to withstand the pull of the aerial. Square poles measuring 2 x 2 inches will be found to be excellent material for the purpose, and an auxiliary pole of this kind can be so arranged as to fold down or collapse should the motor boat have to pass under fixed bridges of low clearance.

There is no specific number of wires to use for motor boat stations in general. If the apparatus that is to be used is known, then there is a certain number of wires which, in conjunction with a certain length span, will give the best results. For receiving purposes only, however, it has been found in actual practice that a two-wire aerial gives as great efficiency as one of four, six, eight or even ten wires. When it comes to the transmission of signals, on the other hand, the two-wire apparatus does not serve as efficiently as one comprising more wires. If the motor boat owner does not object to a six- or eight-wire aerial swinging over his boat, either of those numbers are recommended to him—provided, always, that he purposes using a transformer for his transmitting set that requires a large aerial. But if he does object to such a mass of wire, as detracting possibly from

the trim appearance of his craft, the four-wire aerial offers an excellent alternative.

The extent of an aerial is closely related to the power of the transmitter employed in conjunction with it. If the boat owner erects a four-wire antenna, obviously such a system will not be able to radiate as much energy as one of six or eight or ten wires. Such an aerial, however, is ample to radiate all the energy produced by the average motor boat transmitter. As a matter of precaution it will be well for the boat owner to consider the capacity of the transmitter he intends using before deciding on the number of wires for the aerial. In this the manufacturer of the transmitting apparatus will be only too glad to furnish him with the information he seeks, provided such data as the span of the aerial, length of the lead-in wires, and height of the aerial is sent with the inquiry. At any rate, the boat owner may safely erect a four-wire aerial if his wireless set is to be of the conventional, low-power type, using a spark coil for the transmitter.

In the September issue of MoToR Boating the subject of the selection of aerial wire was discussed at some length. It will be recalled that three kinds of wire were recommended—copper, phosphor-bronze and aluminum. The first of these, because of its high conductivity, fair strength and ease with which it can be soldered, is perhaps the best for the average motor boat installation. Aluminum, because it possesses far less tensile strength than copper and cannot be readily soldered, recommends itself only in the matters of light weight and low cost. Phosphor-bronze is, beyond doubt, the best of the three, possessing all the advantages of copper with the further advantage of much greater tensile strength. But the cost of this wire renders it prohibitive for use on motor boats, so that its employment is usually limited to commercial and Government installations. After all is said and done, perhaps the motor boat owner would better make hard-drawn copper wire his selection.

As for the size or gauge of wire to use, the metal employed is to be the guide to a great extent. In the instance of phosphor-bronze there is a standard sized wire consisting of seven No. 22 B. & S. gauge strands. In the case of aluminum it is best to use No. 12, while if copper is selected, it would best be of No. 12 or No. 14 gauge, preferably the former.

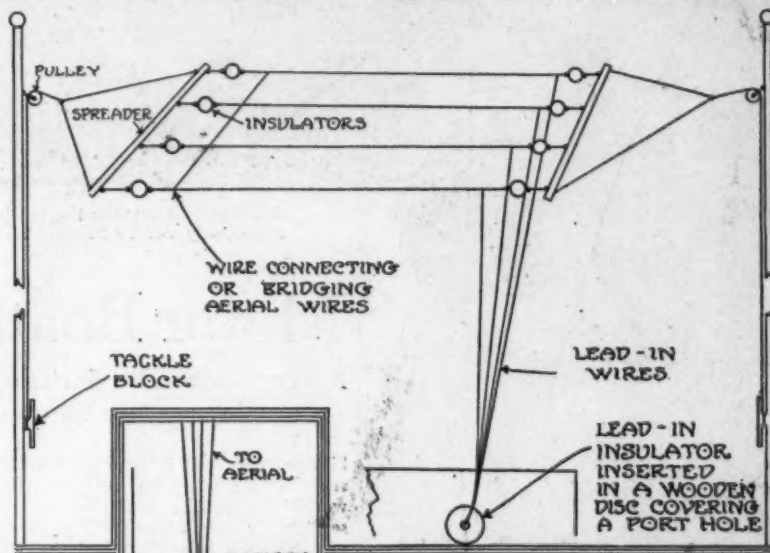
Every motor boat must necessarily present its own problem in installing an aerial, hence

it is quite impossible to give specific directions. The same applies to the list of materials required, which, it becomes evident, must be entirely different in each individual case. However, the materials that may be required in installing the average motor boat aerial are as follows:

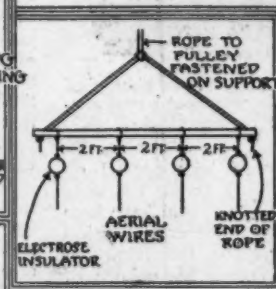
Two wooden sticks, to be used as spreaders, either $1\frac{1}{2}$ inches in diameter or 2×2 inches, of some suitable hard wood, strong, yet not too heavy, preferably ash, but oak if need be, of a length determined by the number of wires used, spaced two feet apart; the necessary quantity of wire to construct the apparatus and twenty-five or fifty feet additional for odds and ends; two electrose ball antenna insulators, which can be obtained at any large electrical supply house for about twenty cents each, for each wire of the aerial proper; an electrose lead-in bushing, or a large porcelain

porting the aerial on the masts of the boat.

The actual task of installing an aerial is simple. Holes are bored in the wooden sticks and a short piece of rope made fast to each in the manner shown in one of the accompanying illustrations. The sticks are then given at least one coat of spar varnish to prevent subsequent warping. Holes are bored at intervals of two feet apart, with the end holes but two inches or so in from the ends of the stick. Wires are passed through these holes and securely fastened by twisting back on themselves in the form of a loop. To the free end of these wires, which are about a foot long, are fastened the electrose insulators, one to each wire, as depicted in the drawing. To the other eye ring of the insulators is fastened the wire of the aerial proper. A rope, passing through a pulley, held on the mast, and down to a tackle block within con-



At the left, details of the lightning switch, and above, the arrangement of the aerial



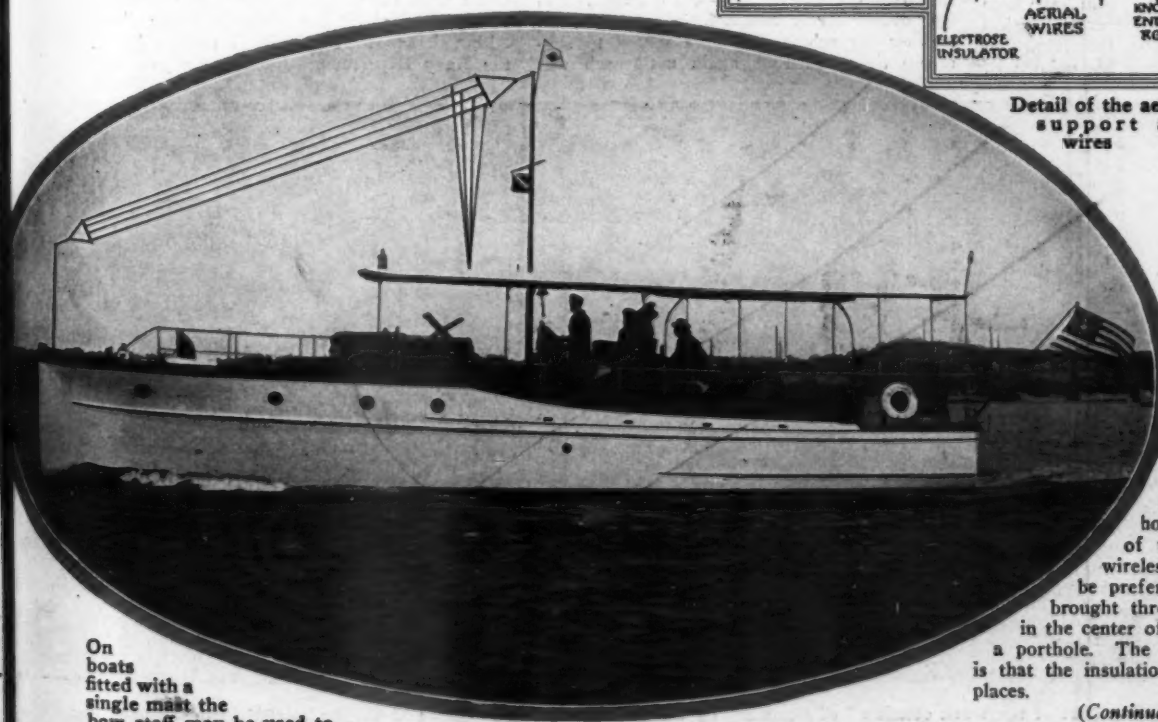
Detail of the aerial support and wires

venient reach of the deck, is fastened to each spreader rope in the exact center. The rope enables the aerial to be lowered at any time for inspection and repairs.

The wiring is simple. If the apparatus is of the L type, at one end all the wires are connected together by means of a wire which bridges them at right angles. At the other end one

lead-in wire is fastened to each aerial wire, and brought down to a point where they can be passed through the electrose lead-in insulator or porcelain tube and into the apparatus room. The lead-in insulator or porcelain tube, it will be understood, is placed in a hole bored through the wall of the cabin containing the wireless equipment. Should it be preferable, the wires can be brought through a lead-in tube held in the center of a wooden disc placed in a porthole. The main point to remember is that the insulation must be perfect at all places.

(Continued on page 58)



On boats fitted with a single mast the bow staff may be used to support one end of the aerial



A submarine attacks the battleship. Just above the arrow will be seen the periscope of the enemy before firing. The submarine is making a submerged speed of 8 knots and the one-pounder on any of the motor boats would have blinded

Motor Boats Win War Games

A Very Successful Series of Maneuvers with the U.S. Navy Which Proves the Value of Motor Craft in Time of War

Lieut. R. F. Bernard, U. S. N., in charge of the naval maneuvers in the first naval district, and Comander Upton, U. S. P. S.

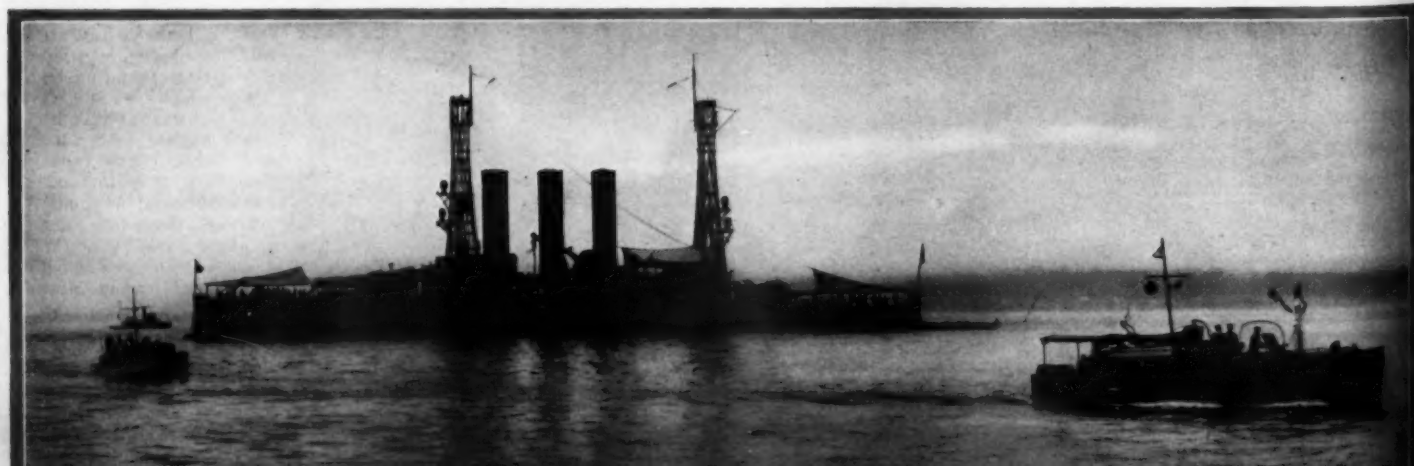
IF Josephus Daniels had been present off the Massachusetts Coast during the week of September 5-10 as he should have been (instead of down in Maine delivering political speeches), he would have seen something that might have made him change his opinion of

his fine navy which he has been describing with such feeling lately as the "greatest in the world." In addition to this he might have observed how easy it was for a motor boat fleet to pick up a submarine just the moment it showed its periscope above the surface of the water and also how well nigh impossible it was for torpedo boat destroyers to get through a picket line of motor boats even on the darkest of dark nights. But our worthy Secretary of the Navy preferred other pleasures than being with us in this first war game in which the department has permitted the motor boats to take part. Therefore, he will have to depend upon the reports turned in by his officers who were present.

Summed up, the motor boat fleet was victorious in every "exercise"—the destroyers and submarines hardly had a look-in. One after another the submarines were forced to submerge time and time again until each was

finally surrounded by a large number of motor boats, grouped closely enough to ram the vulnerable periscope if the motor craft preferred this method of destruction to firing a one-pounder. In practically every instance the submarine finally came to the surface and surrendered, after which she was escorted back to the "mother ship" with the proud motor craft completely surrounding her. The destroyers were "sunk" on each of the three night attacks in which they attempted to get within a mile of the Massachusetts coast line without being discovered.

War games with motor boats participating were being held simultaneously off Boston, Newport, New York and the Delaware Capes. Without doubt those off the Massachusetts Coast were the most successful, as they were carried out along the most scientific lines. Although as MoToR Boating readers know, the Navy Department announced a year ago





undersea craft just as it comes up for twenty seconds to allow the range to be obtained on proximity of the motor boat fleet shows how successfully they were able to hound her. A the submarine and made her useless

that such manoeuvres would be held, little tangible information was forthcoming even when the date set for the work was only four weeks off. As the time slipped by Commander Roger Upton of the United States Power Squadrons realized that if anything worth while was to be accomplished private citizens would have to start something. Consequently, on about the first of August, Commander Upton set the wheels in motion in his organization to have the eastern maneuvers held under the auspices of the Power Squadrons in the Boston, Quincy and Savin Hill Yacht clubs. The Navy Department immediately approved of this action and assigned Lieut. R. F. Bernard, U. S. N., to assist and co-operate with Commander Upton. By much hard work many motor boatmen were interested in the work and soon instruction classes were organized which met several times before the motor boat fleet put to sea. Naval tactics and strategy from the standpoint of the motor boatmen were studied and it was not long before Commander Upton and Lieut. Bernard had worked out all the details of the plans for the work. Twice before the real work with the Navy began, the motor boats which had volunteered got together and went out for a couple of days' practice with

naval officers aboard several of the boats to test the practicability of the plans which had been mapped out. In most instances the motor boats proved that in practice the black-board theory could be carried out, although, of course, there was no "enemy" in sight or expected.

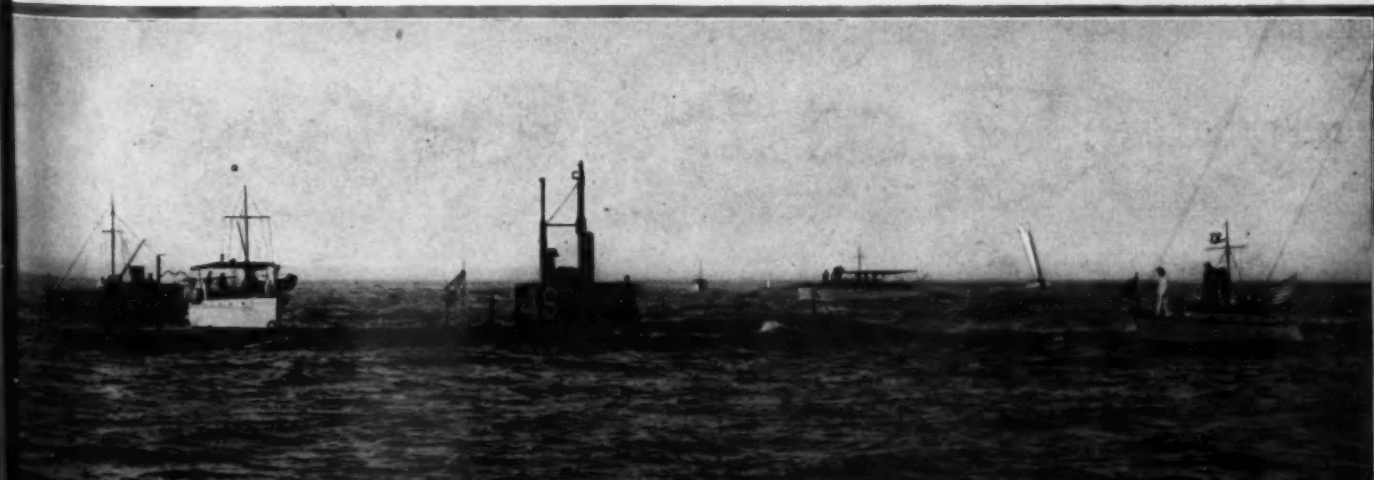
As will be remembered, the first plans announced by the Navy Department provided that only boats having a speed of greater than 20 knots could compete, but later this speed requirement was reduced to 15 knots, then to 10 knots and finally the department announced that boats of any speed would be accepted for this year's manoeuvres. The results showed that the last ruling was very sensible, for it was the slower and more able boats which generally "got" the submarine or destroyer, while their owners could always be relied upon to find and reach the stations assigned to them.

Sixteen owners volunteered their boats, each of these having a crew of about six amateurs aboard, making a total of nearly 100 civilians participating. Of these sixteen boats, nine were owned and manned by Power Squadron members, three were fast express cruisers of the patrol squadron type, but longer than the original boats of this squadron, and four were



A signal, cone over cross, meaning division flagboats maneuver simultaneously, other boats in succession

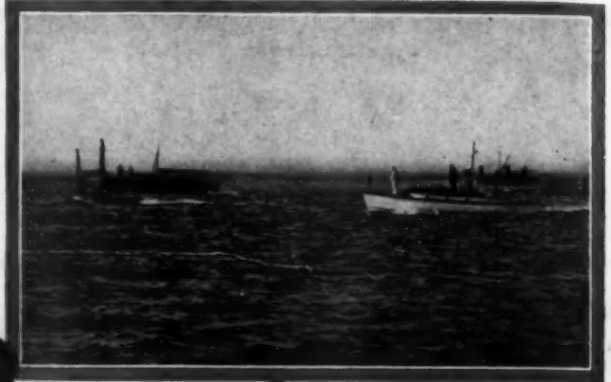
owned by other civilians. The training which the Power Squadron members have been undergoing for the past several seasons was of immense value to them, as the results showed. They proved conclusively that the Power Squadron is an organization which can be



A periscope sighted. Signal—fire a smoke bomb and hoist the ensign at the masthead. The expressions on the participants' faces, including even the naval officers, indicate the enthusiasm which all displayed in the game



boats of between 50- and 60-foot length, having beams of about 11 to 12 feet and motors of approximately 50 h.p. Their work was almost without fault—they kept an excellent line, maintained an equal speed and stayed on their stations until called in. This is the type of boat which to date seems to have the greatest



A submarine comes to the surface, but the motor fleet is upon her in a jiffy. It is only a matter of seconds from the time the periscope first shows until the submarine is on the surface

of greatest service to our Government for supplying men, trained in things nautical, in time of need.

The sixteen motor boats participating were divided up into four groups of four boats each, known as Groups I, II, III and IV, each one being in command of a Group Commander. The boats in the first division were those supposed to have a speed of 20 knots, and in this division were assigned Scoter, owned by Group Commander John L. Saltonstall; Lynx, owned by N. F. Ayer; Boy Scout, owned by Geiger, and Momo, owned by Clinton H. Crane. The first three of these boats were designed by Swasey, and were of the so-called wave-collecting type. Seaworthy these boats undoubtedly were, although it must be confessed that there have been boats built which make less fuss when going through the water at 20-knot speed. Each was powered with a Sterling motor or motors, which behaved perfectly and appeared to drive them at the required speed. Momo had a Standard motor.

Group II was in charge of Group Commander Roger Upton and comprised Valeda, owned by W. A. Hopkins, which also acted as flagship of Lieut. Bernard in charge of the whole fleet; Semloh, owned by E. B. Holmes; Cooter, J. L. Sturtevant, and Gypsy, owned by Robert Herrick, Jr. The boats in Group II were supposed to have a speed of at least 9 knots and proved a most able combination. In fact, it was Group II which carried away most of the honors of the week as far as accomplishing the desired object of the maneuvers was concerned. These were all

possibilities from the combined viewpoint of the yachtsman and the Navy Department. A 10-knot speed would be a little more desirable, but this might be easily and readily obtained by installing about 25 per cent. more power—which could be done by replacing their motors with ones always in stock by American marine engine manufacturers with little or no alterations required on the hull or interior arrangement of the boat. It would be a matter of only a few hours to do the work of installation after the power plant was received and this method of procedure would eliminate the peace-time objection which is present in the express cruisers of today that they are all engines, with no accommodations below decks for comfortable living quarters.

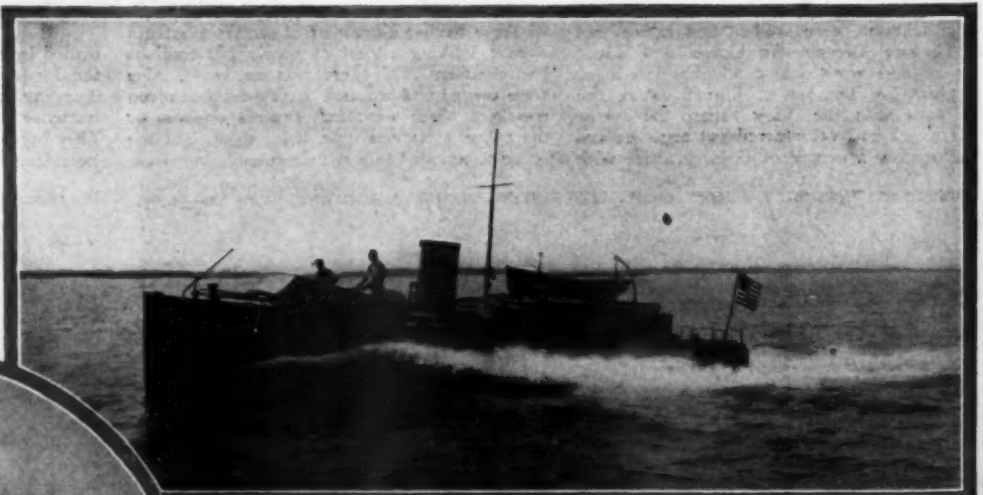
Group III, under Commander C. N. Burnell, aboard Alsorle III, included also Naiad, owned by L. D. Knowlton; Kex II, F. P. Huckins, and Navajo II, owned by R. C. Emery. These were 36- to 50-footers having a normal speed of 8 knots. For the purpose of the maneuvers they were very successful, and they represent a style of boat which is typical of average motor yacht practice today—a type which

possibilities for coastwise work. These are the type of craft referred to as one-man boats, as the owner alone can handle one with ease and safety.

Generally a crew of one paid hand is carried, this being sufficient to maintain her properly. In first cost they represent an investment of from \$5,000 to \$7,000 with an annual charge of about 10 per cent. for maintenance. Coastwise and even deep sea navigation can be easily and readily accomplished in boats of the size which comprised Group III, and it is the type and size of craft which is generally owned by citizens most vitally interested in navigation, seamanship and naval affairs.

Group IV, under Group Commander E. S. Welch, comprised boats of 30 to 36 feet in length, having a speed of 7 knots. Whew, owned by Commander Welch; Ruth, owned by C. W. Hull; Lolomi, owned by Commodore C. A. Vose, and Cherokee, owned by S. E. Guild, made up Group IV. Lolomi and Ruth especially deserve a great deal of credit for their work in connection with the maneuvers, as they never failed to carry out orders given them in spite of their comparatively small

When a submarine was sighted a smoke bomb was fired



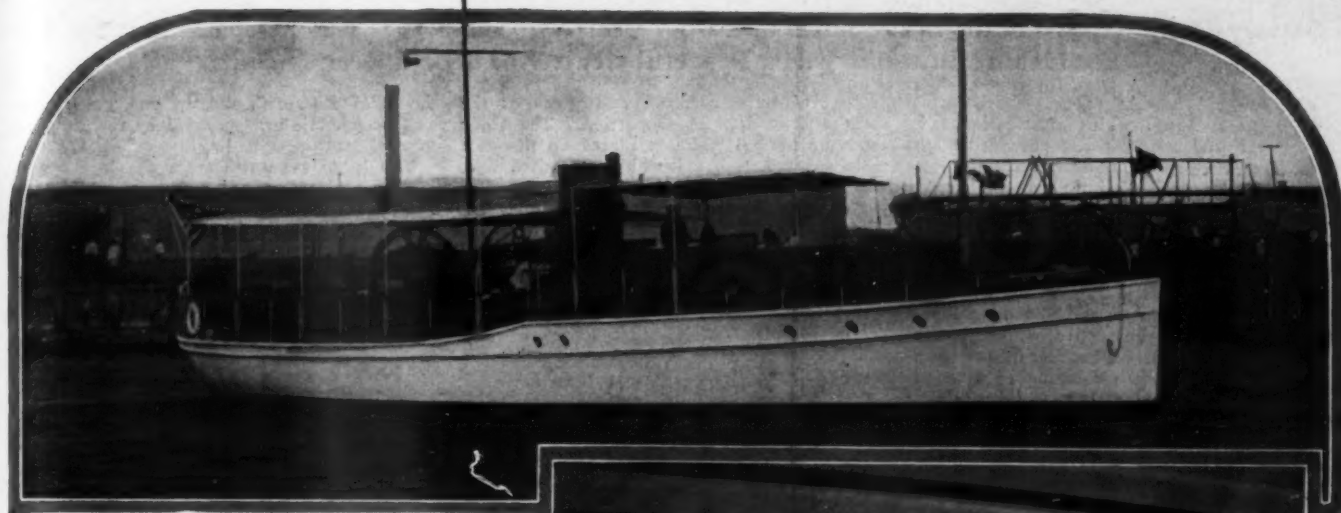
Lynx, one of the boats in Group I, First Naval District. A Swasey design with a Sterling motor

is capable of going anywhere at any time, and is inexpensive enough to allow the average business man to own and maintain one without serious injury to his bank account. Seaworthy in every sense, reliable and under normal conditions having a cruising radius of upwards of 300 miles without replenishing their fuel supply, such boats, have great

size and speed. They clearly demonstrate the practicability and usefulness of small boats for any kind of Government service. But perhaps even more emphasized was the value of the training of the owners and members of crews of such craft to our Government. Their acquaintance with harbors and local conditions was even greater and more extensive than that of the crews of the larger boats.

(Continued on page 62)

A 71-Foot Motor Yacht for All-the-Year Service



Absegami is a handsome motor vessel recently built for A. K. White of Atlantic City

THE past summer was one of disappointment to many would-be owners of motor craft, for the demand upon the builders throughout the country was so great and the conditions imposed by the war so onerous that construction work was pretty generally delayed. Fortunate indeed was the owner who received his new boat on the contract date, while cases were not so very few of delivery which was promised for June being delayed until August. In some instances the boat builder was there with the goods on the specified date and proceedings were held up through non-receipt of the power plant, for the mixed blessing of having more orders than they could immediately attend to, visited itself upon more than one marine engine manufacturer.

Among the builders who turned out their product with satisfactory dispatch, however, was the New York Yacht, Launch & Engine Co., of Morris Heights, N. Y., and the accompanying illustrations of Absegami illustrate a fairly representative type of craft upon whose construction the concern centered its best efforts. This 75-footer was built for A. K. White, of Atlantic City, N. J., and was delivered to him along toward midsummer. She has a waterline length of 71 feet, a beam of 16 feet and a draft of 3½ feet. Her power equipment comprises two six-cylinder 6½ x 8½-inch Twentieth Century motors,

Photographs by Keller & White.



The heating arrangements of the boat provide for a hot water radiator in each stateroom

which have given her speed at the same time that she was proving herself seaworthy.

Absegami is laid out with the crew's quarters forward and with a sunken deck-house for the dining saloon, the galley being built in at the after end of the latter compartment. The engine-room is aft of the deck-house and is equipped with a gasoline tank on each side, built in a water-tight compartment. The engine compartment also contains a 1 k. w. General Electric lighting outfit which supplies the entire boat. A feature of Absegami is her heating plant, radiators being installed in each stateroom and the deck-house, and supplied from a water heater placed under the galley.

The owner's sleeping quarters consist of three staterooms, two being directly aft of the engine bulkhead, and the third at the after end of the cabin. The bathroom is completely fitted out with Curtiss plumbing.

The hull is of heavy construction, and the outside of the cabin is of mahogany. The boat is steered and controlled from the bridge deck.



Two six-cylinder Twentieth Century motors together with a direct-connected electric plant give Absegami all she requires in the way of power and light

The Other Naval Scout

Swasey-Designed 45-Footer the Smaller of Two Vessels Chosen by the Navy Department for Its Equivalent Suitability as a Peaceful Cruiser or a Belligerent Scout

OF equal interest to the 66-foot naval patrol vessel which was designed by the Luders people and described in the last issue of *MoToR Boating*, is the 45-footer shown in the accompanying plans—the smaller of two dual-purpose motor boats being built for the United States Government to serve as examples of what may be done along these lines. It is thought at the time of going to press that this craft will have been completed by the first of October, and will be stationed at Boston, so that prospective builders of fast motor boats may inspect her and inform themselves regarding the Government's ideas of what type of pleasure craft will be suitable for its uses in time of war.

The 45-footer was designed by Swasey, Raymond & Page, of Boston, Mass., who have been conspicuous in turning out fast motor vessels of the so-called patrol type, and constructed at the yards of Geo. Lawley & Sons, Inc., at Neponset, Mass. In general design the boat is similar to the famous *Houp-la*, with a round-bottom displacement hull similar to the above-mentioned Patrol Squadron boats which have performed so creditably during the season just closing.

The power plant consists of two six-cylinder 125 h.p. Van Blerck motors that are expected to drive the boat at more than 25 m.p.h. The engines are installed slightly forward of amidships under the bridge deck, and are placed on stringers of more than the usual length and strength. The exhaust lines are led to the sides of the boat and out at the stern. The fuel tanks, which have a capacity of slightly more than 500 gallons, are mounted under the after deck and are four in number. This gasoline capacity is intended to give an operating radius at full speed of more than 500 miles and more than that at reduced speeds.

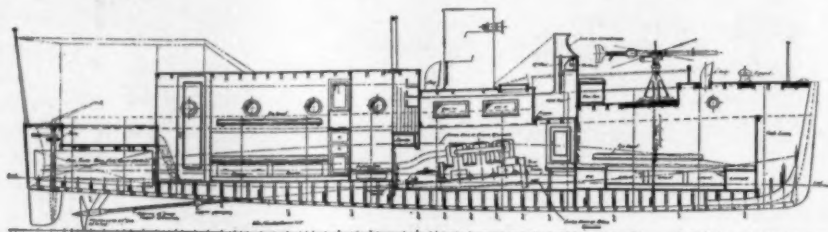
The owner's stateroom, which will automatically become the officers' quarters in time of official service, is laid out under the cabin trunk aft, and is a roomy compartment with sleeping accommodations for four persons. Shelves are provided at either beam, the dining table is permanently fixed in the center of the room and the buffet and clothes lockers are arranged forward. Between the engine-room and the owner's stateroom is the

galley, which extends the full width of the boat and is deep in proportion. The stove and the alcohol tank are placed on the port side and the ice-box is at the starboard side, the sink being in the center and the dish lockers and storage places for edibles where they will be most convenient.

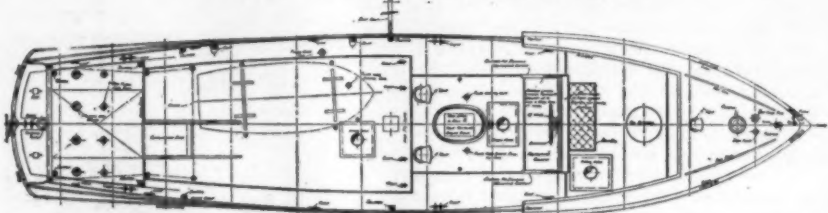
The crew's quarters in the forecabin are

forces of the recoil, and the gun, gun mount and deck circle are provided by the Government.

The boat is steered from the helmsman's cockpit amidships and there is further deck space aft of the cabin trunk from which in case of emergency the course may be maintained by the auxiliary tiller.



Section profile of the 45-foot naval patrol boat designed by Swasey, Raymond & Page, showing the disposition of the engines, bunks, etc.



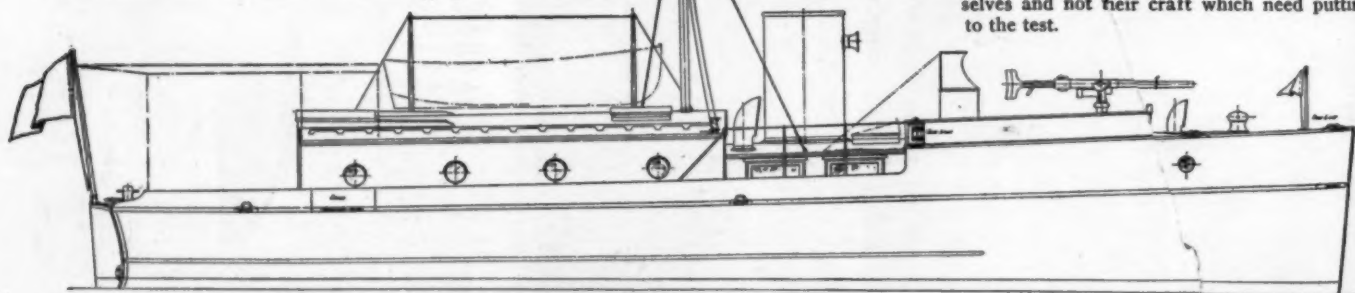
Deck plan of the dual-purpose craft. Note the sunken cockpit for the helmsman and the ammunition chest forward of it

arranged with fixed berths for two. A mess table which conforms in shape to the converging lines of the boat's bow is provided, and when not from racks on head. Toilet are provided in addition to folding wash basin aft.

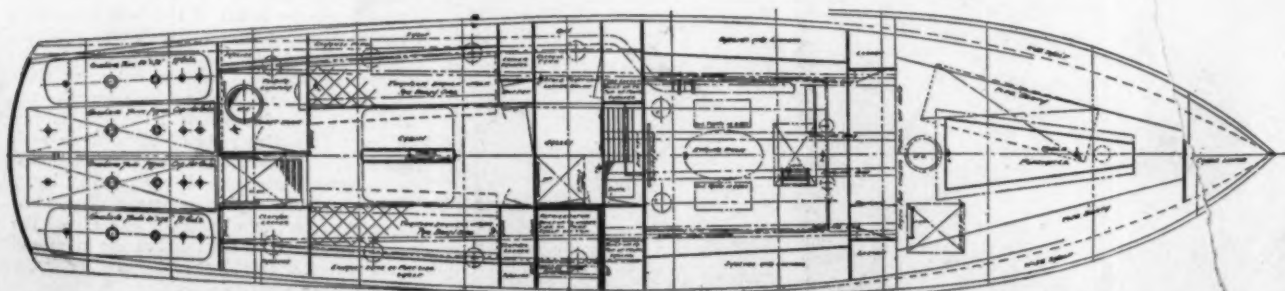
The one-pound rapid fire gun the most important boat's equipment is sunken deck forward. The gun foundation is specially constructed to withstand the

The construction of this 45-footer is especially strong, and the hull was carefully designed to provide ventilation in each compartment. The boat is divided into four watertight compartments by three steel bulkheads. The beam is 10 feet and the draft 3 feet.

It is rather a pity that this boat was not constructed in time to take part in the September maneuvers of the mosquito fleet, for had she done so, the Government would have had an excellent chance of proving for itself whether its ideas, as worked out by the designers, will prove of utmost satisfaction for the purpose intended. However, when all is said and done, it is the amateur boatmen themselves and not their craft which need putting to the test.



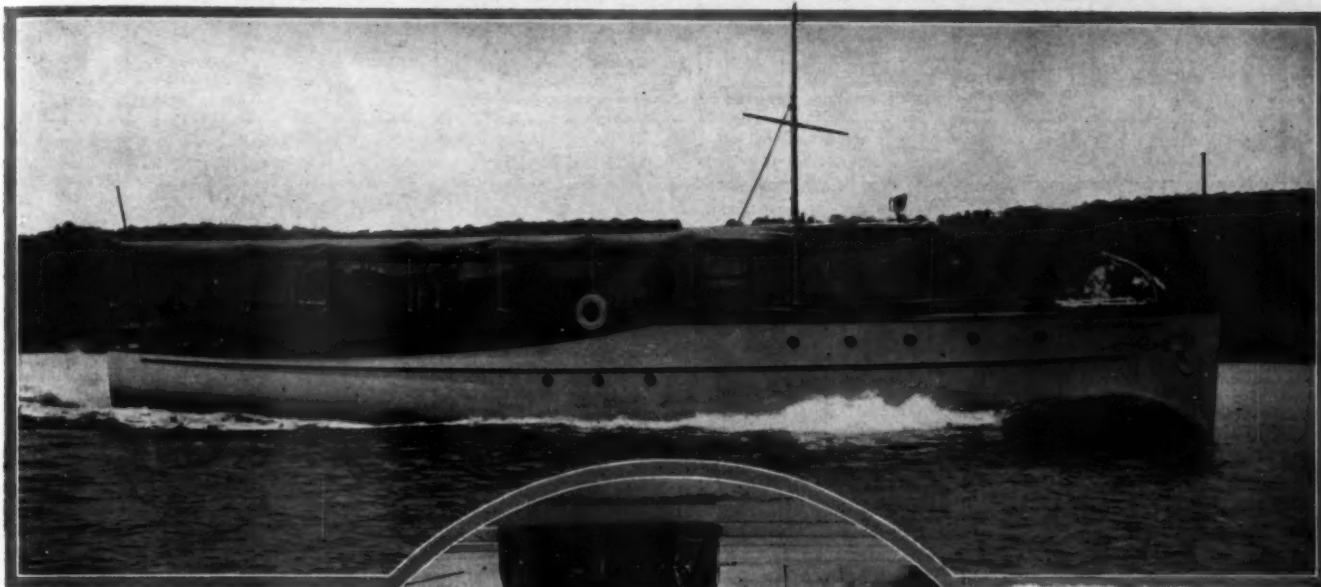
In inboard appearance this new Naval auxiliary resembles the famous Swasey-designed *Houp-la* model



In laying out the interior, the Government's wish to have this 45-footer perfectly suitable for the needs of the private owner as carefully heeded. The boat has lost none of its comfort by being adapted to the Navy's requirements

An Able Raised-Deck 70-Footer

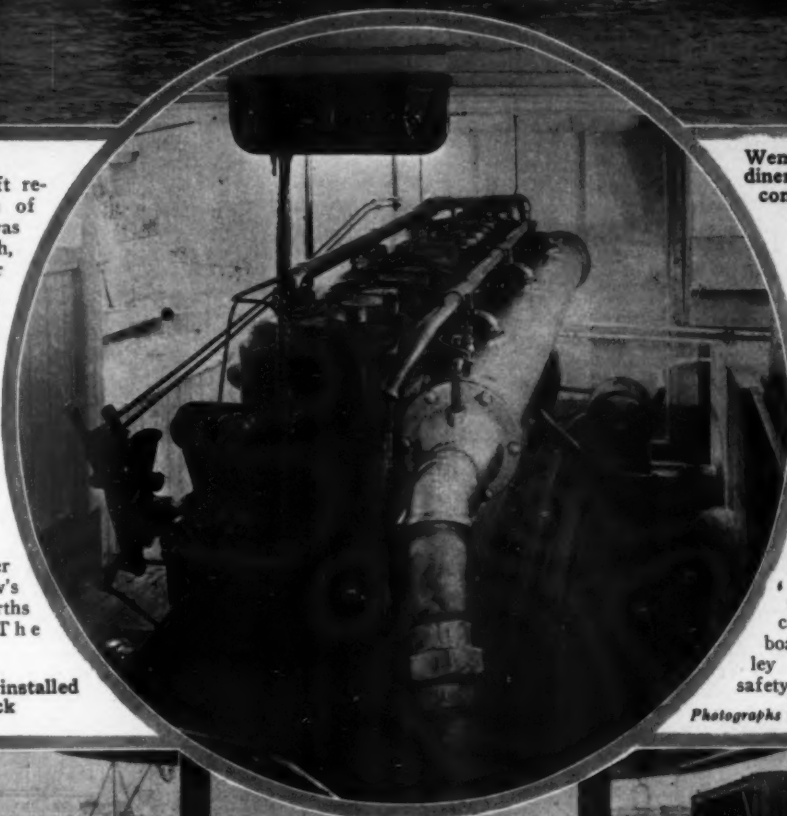
Wemootah, a New Seabury Cruiser Which Is Constructed with Four Galvanized Steel Bulkheads—Six-Cylinder 110 H.P. Motor Which Gives a Speed of 14 Miles Per Hour



OF the many new craft recently launched, one of the most attractive was the motor yacht Wemootah, built for A. Gardiner Cooper, of New York City, and member of the Indian Harbor Yacht Club. Wemootah is of the raised-deck type, 70 feet long, 13 feet beam and 4 1/4 feet draft, is of wood construction and has four galvanized steel bulkheads. The yacht is yellow pine planked and is finished throughout in mahogany.

The usual chain locker forward is followed by crew's quarters fitted with pipe berths and storage lockers. The

The 110 h.p. Speedway is installed under the bridge deck



Wemootah, owned by A. Gardiner Cooper, is one of the most complete cruisers of this season's vintage

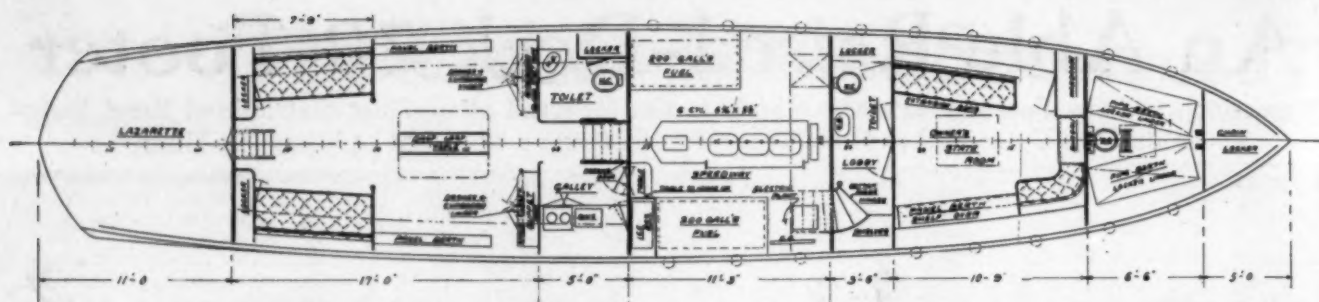
owner's stateroom follows next for the full width of the yacht and is well lighted and ventilated with an overhead skylight. A companionway leads to the bridge deck from the lobby. The owner's toilet is arranged for access from the after end of the stateroom.

The engine-room follows the owner's quarters and is located under the bridge deck. Aft of this deck is a trunk cabin with companionway, on the starboard side of which is the galley fitted with the Speedway safety alcohol galley outfit, and on

Photographs by Rosenfeld.



The bridge is a roomy space with plenty of room for deck chairs. From it the boat is entirely controlled



the port side the guest's toilet and lavatory. The main saloon and dining room is next aft, being fitted with two Pullman and two transom berths, the usual lockers, sideboard, etc.

The yacht is powered with a 110 h.p. Speedway gasoline engine of the new medium-duty type, having six cylinders of $6\frac{3}{4} \times 8\frac{1}{2}$ inch bore and stroke. The yacht made over 14 miles per hour on her official trial trips. The fuel capacity is provided for in two tanks



Looking forward in the main saloon. The stairs lead to the bridge deck and are flanked by the galley and the toilet

Wemootah's interior arrangement plan

of 200 gal-
lons each

The illumination is by dynamo and storage batteries and includes the running lights and a searchlight.

Wemootah is one of the most complete and up-to-date craft built this season by the Gas Engine & Power Co. and Charles L. Seabury & Co., of Morris Heights, New York City, and is in commission on Long Island Sound, in the vicinity of Greenwich, Conn.

Moselle, a Sea Scout with 20-Knot Speed

MOSELLE is a new 35-footer which is notable particularly for its seaworthiness. In designing her, E. N. Burwell, of Boston, Mass., gave a very good freeboard for her length with a pronounced reversed sheer, and her forward parts well flared. Powered with a six-cylinder Niagara motor of 90 h.p. which turns a three-bladed Columbian propeller, a speed of

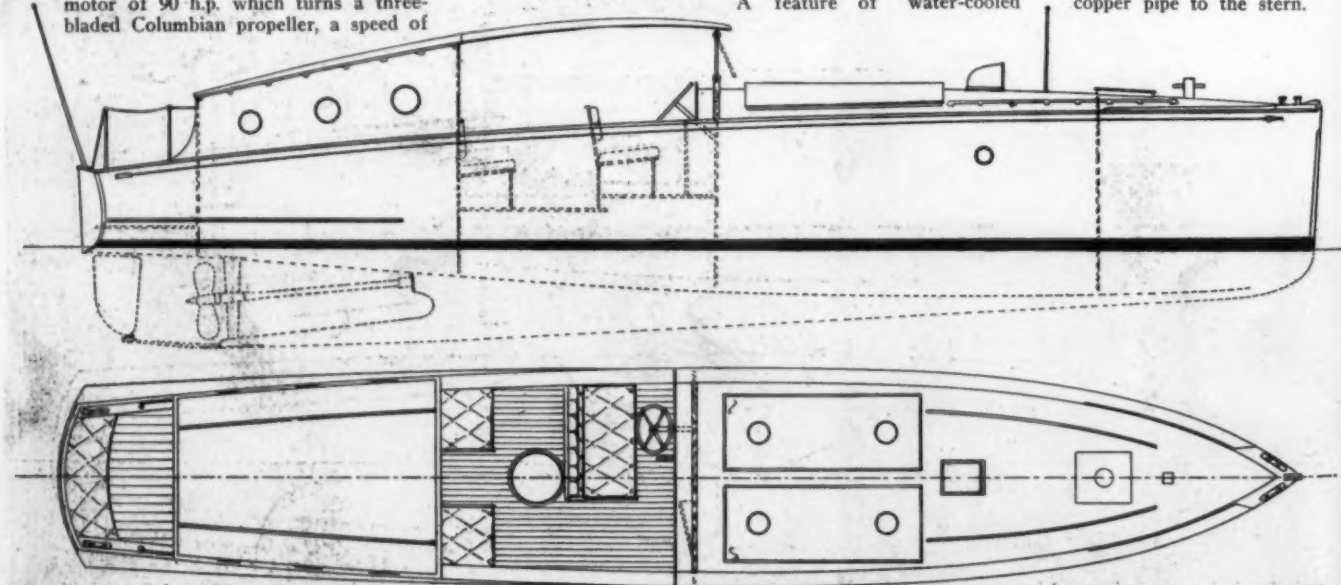
20 knots is attained under ordinary conditions.

Moselle is divided into four water-tight compartments, all of which extend from the keel to the deck. In the forward end of the motor compartment is a Sands' toilet, while in the after-cabin are two transoms with lockers, etc. The interior finish is in black cypress.

A feature of

the boat is the after cabin structure; this arrangement is stated to save very appreciably in weight and expense.

The fuel is carried in four galvanized iron tanks under the cockpit floor and is fed to the motor by a complete Stewart vacuum system. The exhaust is carried through a water-cooled copper pipe to the stern.



Moselle is a 35 x 6-foot express cruiser whose outboard appearance is unusual by reason of the pronounced hogged sheer and the design of the after cabin

Thousand Islands Cup Goes to Lake George

Hawk Eye Owned and Driven by President Judson of the A. P. B. A. Takes Deciding Race of Series After a Tie with Peter Pan VII—New York Boat Not Far from World's Record



Peter Pan VII making the start of the race to decide the tie which had been established between herself and Hawk Eye. Peter Pan VII is shown going over the line 2 minutes, 58 seconds late, owing to clutch trouble which developed after the preparatory signal had been given. This handicap was too much for Peter Pan VII, and while she averaged 53.33 miles an hour, she was not able to overhaul Hawk Eye before the finish line was reached.

TO those of you and us who have followed the motor boat racing this season—at Florida, St Paul, Put-in Bay and the numerous minor attractions, club events and long distance fixtures, there is much to contrast them with when the recent races on

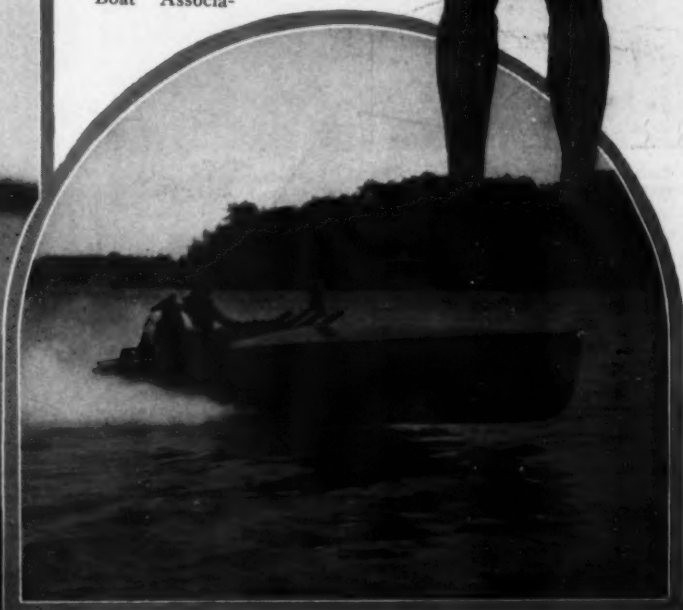
the St. Lawrence River at Alexandria Bay are analyzed. In several of the former races we find publicity the main object sought, while in the recent races for the new Thousand Islands Challenge Cup, we find a contest among sportsmen. Sportsmen as competitors, sports-

men as spectators, and in fact sportsmen everywhere. Is it strange then that the American Power Boat Association

Commodore Judson, the American Power Boat Association's racing president, chief owner of Hawk-eye and leading spirit of motor boat racing in this country



Two real sportsmen, Jack Bickell of Toronto, and James Simpson of New York, owners of Peter Pan VII, and ready to meet all comers in the motor boat racing field



Hawk Eye, winner of the Thousand Islands Yacht Club Championship Trophy

tion, being founded by these same men, on fundamentals suggested by them even before the sport of motor boat racing was established or had become a national pastime should have lived, grown and become the controlling factor in the motor boat kingdom that it has? It was here that the idea of the Gold Cup was first worked into tangible shape, and after the Thousand Islands Yacht Club had presented it to the A. P. B. A. it was these same sportsmen who came to New York in 1904 and competed for the Gold Cup on the Hudson River. By winning this first race, they were entitled to take it back to the St. Lawrence, where they were successful in defending and retaining it until Ankle Deep took it to Lake George in 1913. The Thousand Islands Yacht Club now

offers its new trophy, to be raced for on practically the same terms as the Gold Challenge Cup, except that the contest must be held each year on the St. Lawrence course—a mighty wise stipulation—as no better course and racing conditions, excepting nothing, can be found the country over.

In contrast to other big events this year we find in these races of the Thousand Islands Yacht Club no mention of cash prizes—no thousands of dollars to go to the owner of the winning boat, no house or lot to the driver or mechanic, and no guarantees that their boats would be credited with 60, 70 or 80 miles an hour in the press reports. As a result, what do we find?—first of all, a contest devoid of any semblance of commercialism or professionalism; second, the greatest collection of high-speed boats which had been together thus far this year, and lastly, an event clean as a die, run as it should be run—for contestants—with no desire to win by foul as well as fair means.

As is often the case, the fastest boat did not win—but there was no ill feeling on the part of the loser—he lost, that is all there was to it, presented his name for membership in their club, and publicly announced that should he ever win the Gold Cup or any other trophy worth while, he would offer it to the Thousand Islands Yacht Club to be raced for as they saw fit. That man was James Simpson of New York, at present part owner of Peter Pan VII, and formerly owners of boats of the same name, but having the suf-



The man behind the gun, C. Allen Hayden, Rear Commodore of the Thousand Islands Yacht Club and Chairman of the Regatta Committee, the man chiefly responsible for the success of this year's races



P. D. Q. VI, owned by Alfred Graham Miles. Her owner and his boat deserve better luck than have followed them for the past two years

fixes I to VI with which MoToR Boating readers are so well acquainted. His partner in ownership of Peter Pan VII,



The Regatta Committee—left to right: Commodore C. M. Englis, I. H. Jenney, R. H. Eggleston, C. A. Hayden and C. R. Hoag



P. D. Q. IV, a consistent performer admired by all, but hardly fast enough this year

Hawk Eye, owned and driven by Commodore Albert L. Judson of the Lake George Club, won—after a tie had been established at the end of the first three days' racing. Hawk Eye is the boat which was built to defend the

(Continued on page 34)



Killing the Carbon Jinx

Various Methods Described of Removing the Unburnt Products of Combustion in the Engine Cylinders Without Taking the Engine Down—Scraping and Burning With Oxygen Most Favored

THE PRIZE CONTEST—Answers to the First Question in the August Issue

Scraping the Best Method

(The Prize-Winning Answer)

THE satisfactory removal of carbon from an internal combustion motor without taking the machine apart is largely a matter of design of the individual motor, because construction varies among the different types and sizes and it is practically impossible to describe any one method that will be satisfactory with all. For instance, there are two-cycle and four-cycle motors, motors with removable cylinder heads, T-head motors and L-head motors—all requiring more or less different treatment.

Carbon collects in two forms, one soft and powdery caused by poor combustion, and the other hard and gritty due to too much oil or the use of poor oil. In view of these facts, it is wise to see that the carbureter is adjusted to give the best mixture possible and also to use the best oil and not any more of it than is necessary for proper lubrication.

Numerous means have been devised for cleaning cylinders, the oldest being scraping. Chemical removers, both liquid and dry, have been put on the market and lately the oxygen process of burning out carbon has been introduced. There is also the method of using either kerosene or denatured alcohol when the motor is hot.

Where it is possible to use scrapers, the best results can be obtained. In the motor with removable cylinder head, cleaning out carbon is a simple matter, as all that is necessary is to take off a few nuts, lift the head and the whole combustion space is exposed so it can be scraped clean. Scraping can also be employed in the case of the T-head or L-head four-cycle motor without taking the motor down, as it is only necessary to remove the spark plugs and valve caps. The piston is placed at top dead center on the compression stroke so that both valves are closed, and by means of curved scraping tools, shaped at the end like a small hoe, the inside of the cylinders can be reached and practically all of the carbon scraped off. Loose particles that remain may be taken out by attaching some waste to the end of a scraper, dipping it in kerosene, and wiping it around inside the cylinder. This process is of course easiest with the T-head motor as it can be gotten at from each side, but it is also well adapted to the L-head motor.

The writer has found it a very good idea, when returning from a run, to allow about a cupful of kerosene to be sucked through the carbureter while the motor is running, pouring it slowly into the intake and then before leaving, to put some more into each cylinder and let it remain over night as above. Applying this treatment about once a week, the motor can be kept pretty clean.

A motor in good condition with oil supply and carbureter properly adjusted should easily run a whole season without accumulat-

ing much carbon, and if given a dose of kerosene occasionally should be kept in good shape. With some motors, especially the small two-cycle, there is no alternative to tearing down for a thorough cleaning, but as most motors need an overhauling once a year anyway, the carbon can be removed when this is done. In my opinion there is really no thoroughly satisfactory means of removing carbon without taking down the whole motor unless the construction is such that the inside of the cylinders can be reached with scrapers.

ALFRED L. MEGILL, Brooklyn, N. Y.

Questions for the December Issue

1. Describe a simple cost system which you have evolved to show the amounts expended on your boat for construction, operation, maintenance, etc.

Suggested by L. R. L., Columbus, O.

2. Show by drawings or photographs the best method of fastening curtains down and rolling and fastening them up. "One man" methods are desired.

Suggested by Bowline, New York City.

Rules for the Contest

Answers to these questions, addressed to the Editor of MoToR Boating, 119 West 40th St., New York, must be (a) in our hands on or before **October 20**. (b) about 500 words long. (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses. (The names will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or about the **20th of October**. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article advertised in the *current issue* of MoToR Boating, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in the *current issue* of MoToR Boating which sells for more than that amount. (There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.)

For each of the questions selected for use in the next contest, any article advertised in this issue of MoToR Boating, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in this issue of MoToR Boating which sells for more than that amount.

Removal Methods Many and Varied

THE residue in the cylinders of the gasoline motor in the form of carbon deposits is the result of incomplete combustion of the lubricant that passes the piston rings, the sooty deposits from the gasoline and some portions of dust from the atmosphere.

The deposits on the piston heads are usually the heaviest and are most likely to remain incandescent while the motor is running, for this part is not water-jacketed as are the other parts of the combustion chamber and more easily retains the heat from the previous explosions.

Usually removing the carbon from this is all that is necessary to remove the annoyance, for those deposits on the water-jacketed portions of the chamber are usually of an oily nature and are not at all likely to become hot enough to cause pre-ignition.

Methods of removing the carbon are many and varied, but the one of scraping them out by means of the bent tool or scraper inserted through the spark plug hole or valve cover and afterwards blowing out the loosened particles by means of an air hose or bicycle pump, is probably the most effective method.

Liquid removers such as alcohol, vinegar, kerosene and manufactured solvents may be injected into the cylinders while the engine is hot and allowed to remain over night or longer.

They tend to loosen the deposits but sufficient quantities of them usually seep past the pistons and rings down into the engine base, mixing with the lubricant, and making its renewal necessary.

When you send in your answers you must state what you will take for a prize should you win one

After loosening the deposits, their removal by some means, such as a squirt gun, is important or it is likely that they will remain to further adhere to the piston and sides of the cylinder when the engine is again run.

Burning out by means of the oxygen process is effective, if done by an experienced man, but the excessive heat developed, when the oxygen combined with the carbon is ignited, tends to pit the metal, making its condition such that the deposits adhere more readily than before. Careless use of this process has resulted in more than one ruined engine.

Good results are sometimes obtained by the use of a piece of soft iron or brass chain, of a size that will go through the spark plug hole and from six to ten inches in length. This is inserted through the spark plug hole or other opening, and a couple of teaspoonfuls of kerosene having been squirted in to assist the removal, the ignition is cut off from the cylinder and the engine started. Five or ten minutes is usually long enough to rid each cylinder of the troublesome deposits.

G. A. L., Washington, D. C.

The Oxygen Process

By experience, I have found several ways of removing some of the carbon from a gasoline motor without disassembling. However, to date, I have found but one way to remove it all. Of course, it helps to remove some of it, but satisfactory results are only obtained when the carbon is entirely removed periodically.

It may be instructive to review briefly the different ways I have tried that were only partially effective.

First: I was led to believe that there was great virtue in kerosene. Kerosene is a good agent to remove rust or grease, but carbon is insoluble in kerosene, and therefore will not be dislodged by its use. I tried kerosene in two ways, first by dosing through the carburetor with the motor running, and second by injection into the cylinders when hot. Both of these methods led eventually to the same place—that is, a general overhauling.

Next in order came the chain method. In this process a small chain is dropped into the cylinder and with the spark plug removed from that cylinder the motor is operated at moderate speed for about five minutes. The chain loosens the carbon formed on the piston and cylinder heads so that it can be blown out with compressed air, or washed out with kerosene. The carbon formed in the valve chambers in L- or T-head motors must be removed with scrapers.

I have also tried scrapers, going at the job a good deal as a dentist prepares a tooth for a filling. I have three or four different shaped scrapers and believe with about a half dozen more shapes, a mirror and a light, such as a dentist uses, I could eventually clean out every atom of carbon. However, this is a long, tedious process, which results in much procrastination and a dirty motor.

Just to prevent the question being raised I should like to state that I have also tried the injection of water or steam through the carburetor and have found this method ineffective, to say the least.

I have found but one method that takes out the carbon quickly and effectively. Carbon burns

(once ignition is started) in pure oxygen just as paper burns on the hearth, and as far as I am able to determine, there are no unsatisfactory after effects.

I buy my oxygen from the drug store put up in the small-sized cylinder, such as is used by physicians. The cylinder, with attachment for hose, costs about \$3.50 and the oxygen \$2.50. Full credit can be obtained for the cylinder when returned, or it can be exchanged when empty at any drug store for a charged cylinder. I find that one cylinder of oxygen will decarbonize a four-cylinder motor four times. Not over thirty minutes is required to complete the job, which should be performed every thirty days when the motor is in more or less intermittent use.

I should state that the only equipment I

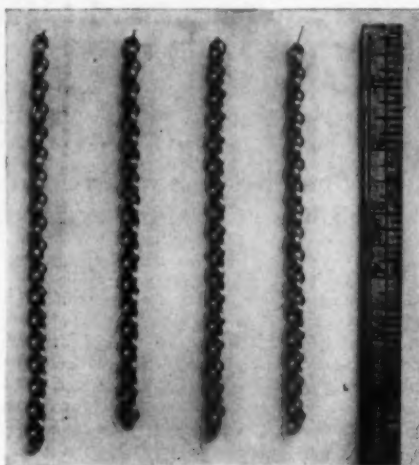


Fig. 1. showing the proper length of chain



Fig. 2. The chain, according to Double Link, must be of small-diameter wire, and the length restricted enough so that should all the pieces become massed together, they will occupy no greater area than the above

have, in addition to the oxygen cylinder, is about six feet of $\frac{1}{4}$ -inch rubber hose and about two feet of $\frac{1}{8}$ -inch soft copper tubing. The copper tubing is inserted in the cylinder and bent around so that the oxygen will reach all corners.

A few precautions are necessary and are as follows: While the motor is running turn off the gasoline at the tank and allow the motor to use all the gasoline in the carburetor. Remove the caps over the inlet and exhaust valves and set one piston at the top of the stroke. With a small screwdriver or old file loosen all the carbon you can see in the valve chamber and blow it out. Do this for each cylinder before using the oxygen. Roll small pieces of oily waste about the size of a match and put one in each valve chamber. Clamp the oxygen cylinder in an upright position to some stationary object and fit a small wrench to the valve stem. Attach the rubber hose and begin with the No. 1 cylinder with the piston at the top of the stroke. Light the oily waste and open the oxygen valve just enough to cause a brisk combustion. Work the copper tube around in the cylinder until the combustion almost ceases—this should not take over fifteen or thirty seconds. Turn off the oxygen quickly and proceed to the next cylinder. After all burning is finished blow out all residue with compressed

air or suck it out with a vacuum cleaner.

LOUIS R. LEE,
Columbus, O.

The Chain Method

For two seasons the author has employed with entire satisfaction the method of short pieces of chain put into the cylinders while the engine is running. One cylinder at a time is treated in this manner for from five to ten minutes and then the engine is stopped and the chain removed with hooks through the spark plug opening through which it was inserted. The following precautions are absolutely necessary.

1.—The carbon must be dry and not oil soaked. This may readily be determined by scraping a little off the top of the cylinder with a hook before inserting the chain. If the carbon is gummed with oil the engine should be run for part of a day with the oil reduced to the lowest safe rate so that the excess will be burned out.

2.—A chain similar to that shown in Fig. 1, is cut into short lengths, about 4 inches each, and two or three pieces are put into the cylinders according to the size thereof. The writer usually employs about 12 inches or less of the so-called $\frac{1}{4}$ -inch universal double-jointed chain. Almost any other kind of chain will do providing it is made of wire having a diameter similar to that of the ordinary pin or hairpin. The weight of the chain must be light in order to avoid a hard and resisting mass between the top of the cylinder and that of the piston. The fine wire of the chain will permit it to bend easily and quickly while red hot, if caught between these two surfaces.

4.—The total length of chain must be such that if all the pieces become massed together as shown in Fig. 2 they will not be an obstacle to the travel of the piston. The wooden measure shown in both Figs. 1 and 2 is about $\frac{1}{2}$ inch wide and its graduations will show definitely how small a mass two pieces about 4 inches long will make.

Results: In two seasons' experience with this method the author has only had one accident and that of trivial character, i. e., the catching of a fragment of link in the spark plug and short-circuiting it. Shaking easily removed the pieces from the plug. The valve action has never been interfered with.

The dry carbon dust broken away by the rapidly thrown chain is quickly blown out through the exhaust valve and when the work is well done the surfaces are left almost as bright and clean as those in a new machine. The method is warmly recommended to any boat owner who will use it in the exact method described, which includes the proper chain.

Limitations: This method does not remove carbon from the cylinder rings, which may be allowed to stand throughout the season unless carelessness has permitted an extraordinary amount of carbon to collect in the cylinders. This contribution, however, is addressed to captains who have more intelligence in general and more respect for their engine in particular than to permit this to happen.

A method of carbon removal, or rather prevention, which is not without its advantages is that of pouring a cupful of kerosene or denatured alcohol into each cylinder when it is hot, but this method is liable to cause trouble through diluting the lubricating oil in the base.

DOUBLE LINK, N. Y. C.

Cleaning the Gasoline Line

How the Artery Through Which the Life Fluid of the Engine Flows May Be Rid of Any Obstruction with the Least Interference to the Running of the Motor—Two Fuel Feeds Suggested

THE PRIZE CONTEST—Answers to the Second Question in the August Issue

Remedies and Preventives

(The Prize-Winning Answer)

THAT the fuel tank and pipe line to the carbureter should be kept clean and free from sediment has been repeatedly demonstrated by the failure of a perfectly good motor to motte without gasoline even though the tank be filled. Straining all the gasoline through a chamois or gauze strainer funnel will prevent much of the dirt often present in the gasoline from entering the

the stoppage is most likely to be at the tank shut-off and you must work blind from the wrong end. However the flow of fuel is restored the result will not be permanent, and a recurrence of the trouble may be expected until the tank and fuel line are thoroughly cleaned.

If convenient, remove the tank (it is worth while), throw in some small nuts, bolts, punchings and revolve the tank. Then put in a gallon or two of hot water and shake things up properly. Now to make the job right, treat the tank with a two per cent. or three per cent. solution of fluorhydric acid for one

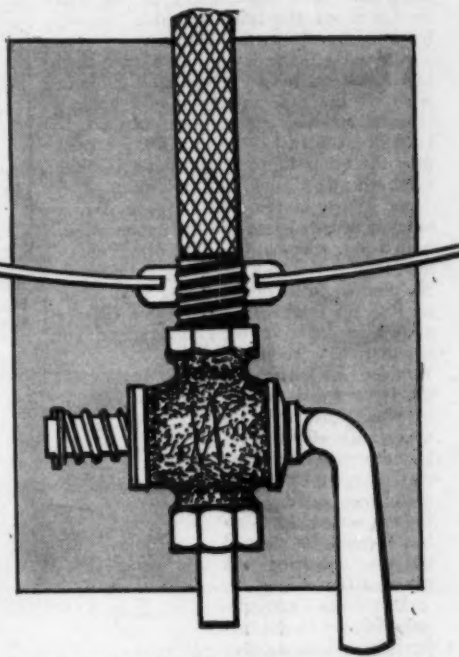
or two hours. The acid will loosen and in time dissolve the dirt, sand, etc., that has accumulated. This acid attacks glass readily but is exceedingly slow in its action on metals; so much so that it is kept in metal bottles. Muriatic acid will clean the tank but it is more likely to cut the galvanizing. Treat the pipe line to the same. Afterwards neutralize the acid with lime milk and then wash with clean water. This same method will give good results on a clogged water jacket.

While the tank is drying make a copper gauze cone about three inches long that will just pass through the tank outlet and solder it to the shut-off or to a bushing. (See cut.)

In a new installation get a 1/2-inch outlet connection to the tank and make the cone this size, bushing down for the shut-off. At the carbureter use a drain and provision

good strainer having a drain for removing the gauze.

Under the most careless conditions no tank will collect sediment to a depth of three inches in a season's running, and the carbureter strainer will catch the water and fine particles



Gauze cone used by Mr. Moores as a preventive of trouble

which pass through the coarser tank strainer. The above straining scheme has been in operation for five years and not once has the flow of fuel been interrupted.

W. B. MOORES, Newburgh, N. Y.

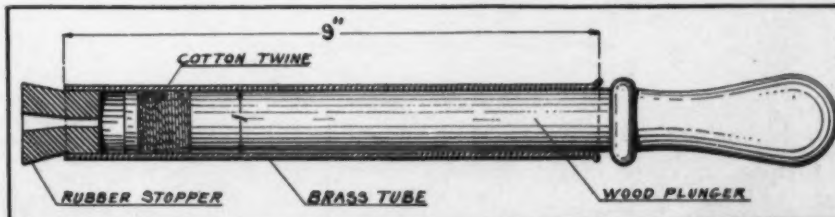
Simple Methods Often Best

THE drawing illustrates a device which is very similar to the old-fashioned squirt gun. It is made of a piece of brass pipe or tubing provided with an ordinary rubber stopper at one end and fitted with a wooden plunger. With it the gasoline pipe may be quickly freed from any sediment. Simply disconnect the pipe at the carbureter, insert the end into the rubber stopper and work the plunger.

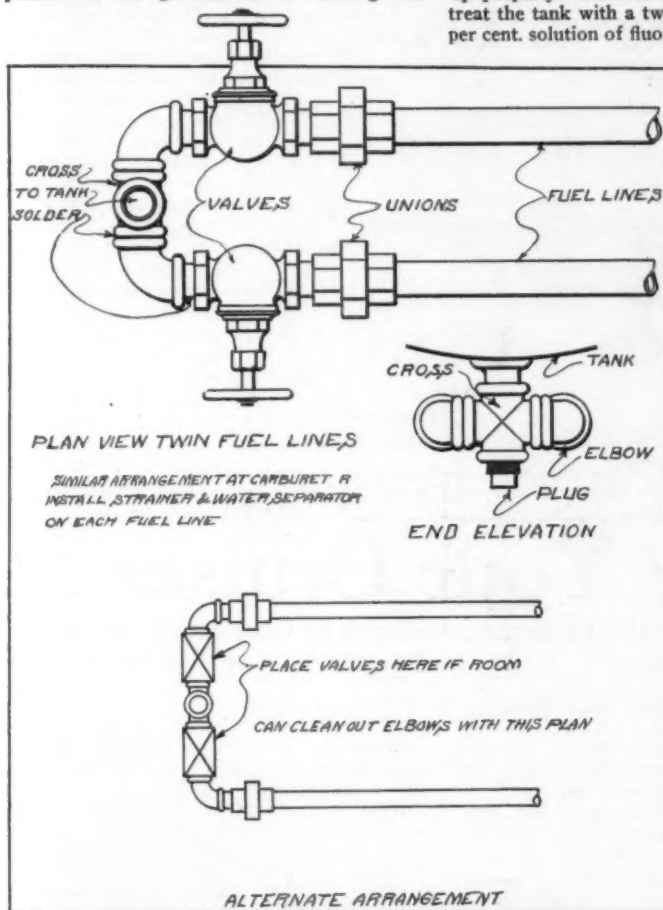
In order to prevent the sediment from being forced back into the gasoline tank, the pump may be applied to the end of the tube with the plunger in, drawn out, removed, and emptied, and the operation repeated several times, in which case all the foul matter in the pipe will be withdrawn.

This will be found a very satisfactory method and will cause a minimum of delay in the running of the engine.

J. F. C., Meriden, Conn.



An adaption of the old-fashioned squirt gun with which J. F. C. removes sediment from his fuel pipe



Two arrangements of twin fuel lines suggested by Mr. Parker

tank; but even then a few grains of sand, etc., will work in when the cap is removed; and there seems to be a small quantity of acid or other corroding agent in the gasoline which in time attacks the galvanizing of the tank, forming a white sediment or scale.

The one sure method of remedying the trouble is to eliminate the cause or make it ineffective; but first let us clean out the pipe line and get running.

Remove the tank cap, break the connection at the carbureter, and force the obstruction back into the tank with air from the whistle pressure. A tee in the line in place of an elbow would facilitate the connection or it could easily be made permanent. Lacking compressed air a hand whistle or tire pump will answer. Possibly you may be able to blow the obstruction out with your mouth (some could easily).

A wire may help, but

Twin Fuel Lines for Easy Cleaning

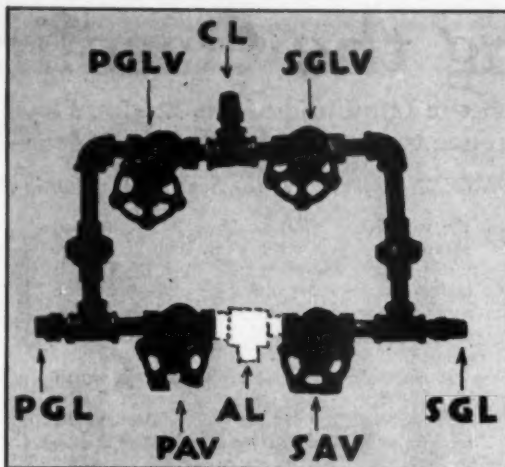
IT should be possible to clean the fuel line of a boat without stopping the engine at all, for the pipe is most likely to stop up when in a heavy sea, due to the sediment being washed around in the tank and getting into and clogging the pipe. It is unnecessary to say that this is about the least desirable time to have to shut down the engine.

A good scheme is to use a twin fuel line with suitable valves and unions, when if the pipe in use should become clogged and the engine begin to miss or back fire, the fuel could be quickly turned into the other line and the defective one removed and cleaned out at leisure.

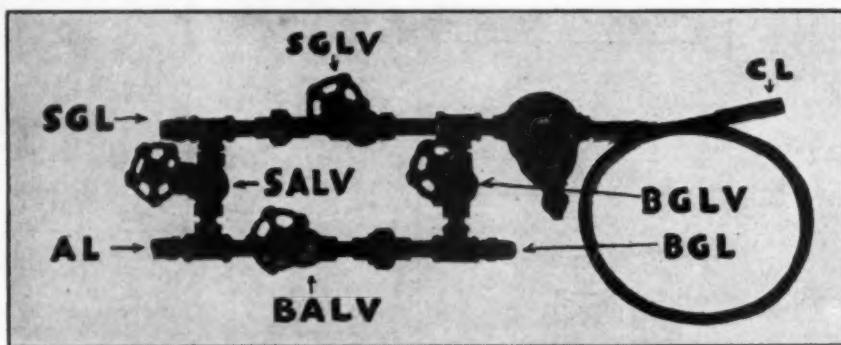
As shown in the sketch (page 25), a cross is screwed into the tank connection, with a plug screwed into the bottom opening; then if the tank outlet should clog up the plug could be removed and a wire run up into the tank. Two 90-degree ells are shown in order to economize space, but if there is room it would be better to make gradual bends in the pipes and do away with elbows. Or by the alternate arrangement shown, with the valves next to the cross, the elbows could be cleaned out by removing the pipes at the unions.

A similar arrangement is used at the carburetor end, using two valves and a water separator and a strainer for each pipe line.

H. H. PARKER,
Oakland, Cal.



Air Pressure's arrangement when the tanks are installed at the sides of the boat. An explanation of the letters used may be gained from the accompanying text



Double fuel system used by Air Pressure. If the pipe from the bow tank becomes clogged the motor is run from the stern tank while the bow pipe is being blown out

A Double Fuel System

THE air whistle tank is the best source for cleaning out the gasoline lines of ordinary debris which does not require passing a wire or snake through the lines, as should be done at the beginning of each season, in order to remove incrustated deposits. In the writer's experience the following plan works efficiently for cleansing the lines and perfectly for permitting the motor to run during the process. It is at once apparent that for the latter detail—that of keeping the engine running—two tanks are required. One tank may be at the bow and the second at the stern of the boat, which is the arrangement in the cruiser of the writer, or one tank may be at the port side and the other at the starboard side of the engine, which is a rather more common installation at the present time.

Two pipe lines are therefore necessary, of which one must be supplying gasoline to the engine and must be protected from the air pressure while the other is being blown out from the air whistle tank. The arrangement shown in Fig. 1 is that employed by the writer for the last two years in his boat and will be found to work admirably and far better than any system of three-way cocks. The valves are all needle valves and the fittings standard 1/4-inch brass (Continued on page 53)

A Fish Box for Your Cruiser

Descriptions and Plans of Wells Which May Be Built in Under the Deck or Cockpit of the Ordinary Boat—Free Circulation of Water Necessary to Keep the Piscatorial Captives Alive

THE PRIZE CONTEST—Answers to the Third Question in the August Issue

The Most Satisfactory Kind of Well

(The Prize-Winning Answer)

THE best location for a fish box on a small cruiser having a water-tight cockpit would seem to be below the floor. There is a space aft of the reverse gear and alongside of the shaft log that is not generally used, and this location would allow the box to be placed low enough so that there would be a good depth of water for keeping fish or bait alive.

If the sides are brought up to the floor and made water-tight, there can be no objection to cutting a hatch in the floor, as any water that found its way through would

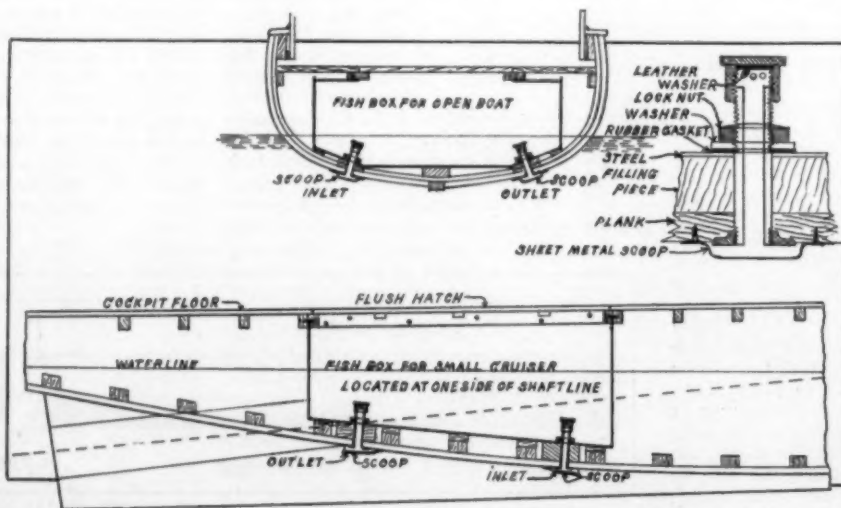
simply go into the fish box, doing no damage.

By placing an inlet and an outlet with scoops and valves as shown, a good circulation of water can be obtained while under way without the use of large pipe or fittings. With this

arrangement, the box could be nearly drained when desired by closing the inlet when the boat is running.

In the open boat the best location would depend largely upon the arrangement of the boat and the location of the machinery. Usually the box could be built in across the boat, either forward or aft of the engine, and the top used to form a seat. When the box is to be placed aft of the machinery the propeller shaft may interfere with placing the box low in the boat. In this case it would be necessary to run a short tube of large diameter through the box for the shaft. This arrangement would not interfere with the free circulation of water inside the box.

For fresh water use, galvanized steel would be a most convenient



Fish wells for open boats and for cruisers, with scoop inlets and outlets, devised by Mr. Christie

and serviceable material for building the box. For salt water, a better plan would be to make the box of wood, lined with light sheet copper.

The cap arrangement shown may be used for closing the water connections, ordinary globe valves may be used although this box may also be used as a locker.

C. H. CHRISTIE, Saginaw, Mich.

A Built-in Fish Box

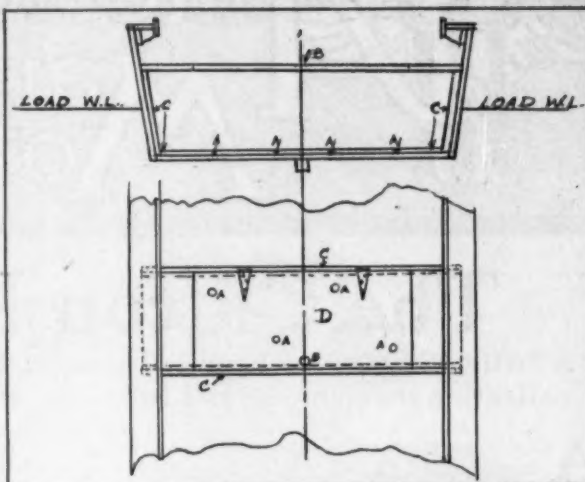
I HAVE designed a fish box that can be permanently built in the center of the open cockpit of a cruiser or open boat, in which position it will be conveniently located to everyone concerned, leaving the space around the gunwales free for use of the party. Or it may be slightly modified and built into the seating arrangement, so as not to take up valuable cockpit space. A good location for the fish box on a cruiser where it is desired to keep the center of the cockpit free, is against the cabin bulkhead, directly under the steering wheel position. In this location it will serve, when not otherwise in use, as a foot rest for the helmsman.

The box is designed for easy and thorough cleansing by removing the inner zinc-lined box or tray, which lifts entirely out of the outer boxing, a sanitary feature appreciated by anyone who has used his boat as a "fishing smack" and then tried to make the boat pleasantly acceptable (more particularly to the gentler sex) for a cruise. When thoroughly scrubbed out the portable tray is replaced clean and odorless until such time as it may be used again.

The box will serve between fishing trips as a convenient weather-proof locker for storage of clothes, life preservers, or such articles as must

be kept dry. For this purpose a canvas-covered lid or cover should be provided, having a ledge extending downward at the edges to shed rain or spray. It may also be used as a temporary ice-box, as the double walls with air spaces between render it admirably suited to this purpose. A drain hole and plug are provided, but are not absolutely necessary, although convenient to allow rain water to drain into the bilge of the boat when a cover is not used. The fish box is made of $\frac{3}{4}$ -inch white pine or cypress throughout and as the ledges supporting the inner tray and other details of the box are easily contrived, no further description is necessary. It is well to state, however, that the supporting ledges on the tray and

place and the side pieces fastened firmly to them.



In a very few hours H. H. B. fitted this fish well in his flat-bottom boat. When the lid is down it serves as a thwart.

Care was taken to see that the pitch closed all seams, after which the cover was fitted on, cut and hinged as shown, and the whole given a coat of paint.

The next day, four $\frac{3}{4}$ -inch holes were bored through the bottom of the hull to admit water. As long as there is the slightest movement of boat or water, these holes provide a constant circulation.

The well in the boat mentioned is just ahead of the engine, and the cover forms the 'midships seat'. The box is divided about three-fourths of its length by a wire screen, and the hole in the smaller section is screened.

This section is used as a receptacle for live bait.

Fish caught in the early morning have been kept alive in this box until late at night, whereas, if the fish had been allowed to die as soon as caught they would undoubtedly have spoiled.

H. H. B., Schenectady, N. Y.

Easy Removal a Factor

THE accompanying drawings show a built-in fish well situated in the cockpit floor.

Fig. 1 shows the well with the covers open and the hook braces in position. It will be seen that the covers made in this way, together with the braces, form a guard around the well and prevent accidents.

A feature of this well is that a galvanized wire basket of a size to just slip into the well facilitates the easy removal of the fish.

Fig. 2 is a section showing the basket in position.

There is an outlet pipe provided in the bottom of the well with a plug which can be removed from the inside. In case the well is below the waterline, this pipe may be connected to a self-bailer, but the well may be easily filled with fresh water from a pail.

FRANK A. YOUNG, Meriden, Conn.

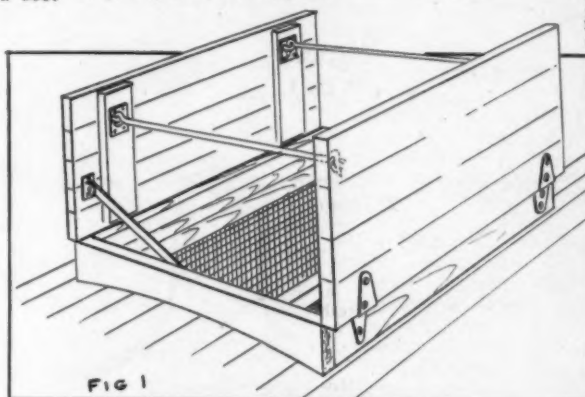


FIG 1

With the covers raised a guard is formed which prevents accidents

box should be omitted at points where the handholes are cut into the sides of the tray for readily withdrawing the latter. W. ELMER MOTZ, Philadelphia, Pa.

Used in a 20-Footer

THE well illustrated was built by the writer in about three hours' time, and has proved itself more than satisfactory. As may be seen from the sketch, the boat in question was a "converted" skiff, the craft being about 20 feet in length with flat bottom and ample beam. The shape of the boat greatly simplified the work of building the well, but there is no reason why this same principle cannot be applied to any boat, great or small. The material required was simply one 1-inch plank about three times as long as the beam of the boat, two 1 x 1-inch strips, a pair of hinges, a few screws and nails and about three pounds of pitch.

The side pieces were fitted in and held in place with a couple of nails while the pitch was applied plentifully around the edges. The strips were then nailed in

The fish well designed by Mr. Young has a removable wire basket

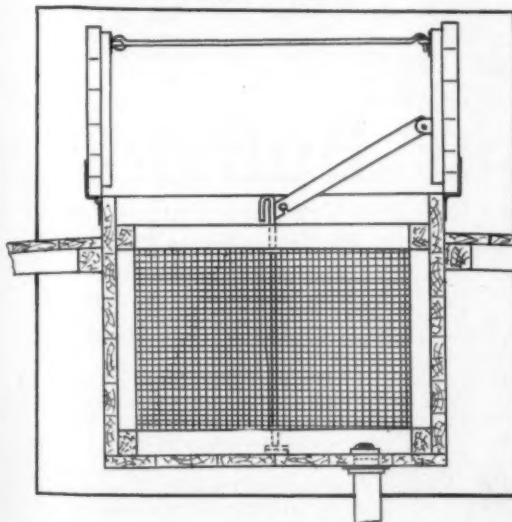


FIG. 2



The Coast Guard lifeboat Victory, powered with a four-cylinder 40-75 h.p. Sterling engine, and in service at the Wood End station. It is called upon to do the severest kind of duty



The Clifton Kerosene Device

A Fitting Designed to Permit Successful Operation on the Heavier Fuels—Principle Involves Heating the Kerosene and Delivering It to the Cylinders in the Shortest Possible Time

A GOOD example of an engine burning kerosene fuel is the Clifton heavy duty 90 h.p. engine illustrated here-with. The method is simple and the results are stated to be quite satisfactory.

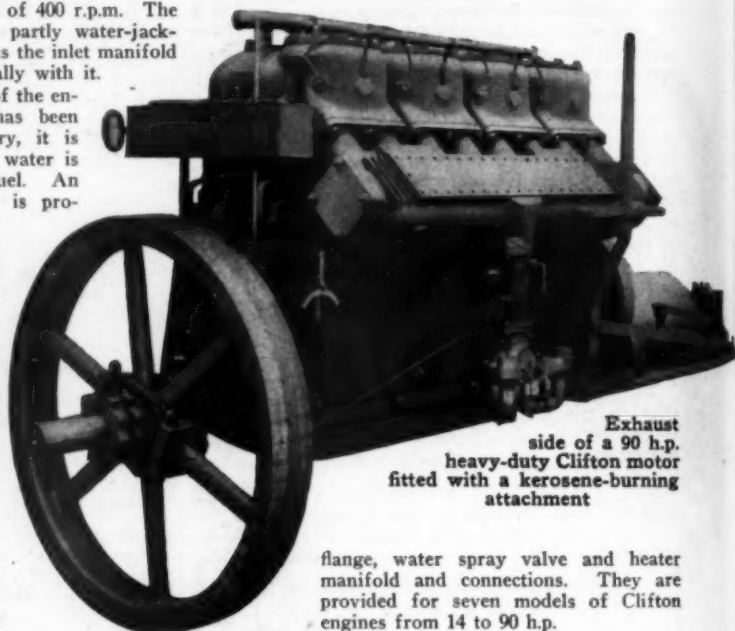
The apparatus consists of two separate carbureters, one for kerosene and one for gasoline. Each carbureter can be adjusted for its fuel and when once adjusted need not be changed except for minor adjustments from time to time. The two carbureters are connected together through a three-way cock. This cock is so designed that in one position the gasoline carbureter is connected to the engine while in the other position the kerosene carbureter is connected.

The principle which has made it possible for the Clifton engine to operate successfully is the heating arrangement. This consists of a passageway, equal in distance to all of the cylinders, heated by the exhaust gases, and with no pockets where the fuel can condense and accumulate. The vaporized fuel is carried into the cylinders as quickly as possible after leaving the carbureter and is kept hot enough to prevent condensation. This, the makers state, is the secret of using kerosene. It must be vaporized and then got into the cylinders before it can go back to its liquid state. The engine shown is a four-cylinder 8½ x 11-inch,

with a normal speed of 400 r.p.m. The exhaust manifold is partly water-jacketed and also contains the inlet manifold which is cast integrally with it.

The performance of the engine on kerosene has been found so satisfactory, it is said, that very little water is required with the fuel. An auxiliary water jet is provided so that fresh water may be injected if required, however.

The Clifton Motor Works, Cincinnati, O., is putting out these kerosene-burning attachments for all sizes of Clifton engines. Old engines originally designed for gasoline may be converted to kerosene engines by obtaining the necessary fittings. These include the double carbureter, inlet pipe and



Exhaust side of a 90 h.p. heavy-duty Clifton motor fitted with a kerosene-burning attachment

flange, water spray valve and heater manifold and connections. They are provided for seven models of Clifton engines from 14 to 90 h.p.

The Cruiser-Runabout Buffalos

Two Sizes of Medium-Duty Engine Designed and Built for Fast Cabined Cruising Craft—Four-Cylinder Models of Two-Block Type, Thoroughly Water-Jacketed, with Working Parts Enclosed

WHEN the Buffalo cruiser and runabout type of marine engine was designed, three years ago, the pendulum of popular fancy had just begun to swing to cabined cruising craft attained such vogue.

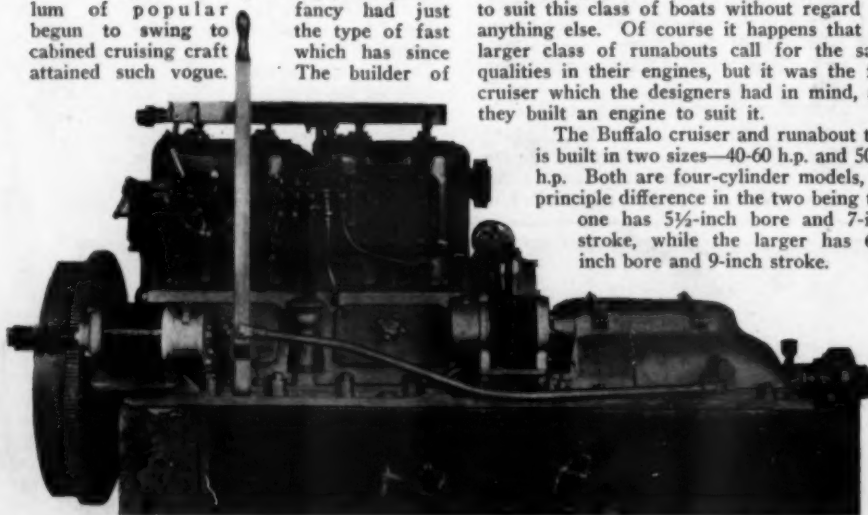
The builder of

Buffalos, the Buffalo Gasoline Motor Co., of Buffalo, N. Y., realized what was coming, and in designing its new model made it specially to suit this class of boats without regard for anything else. Of course it happens that the larger class of runabouts call for the same qualities in their engines, but it was the fast cruiser which the designers had in mind, and they built an engine to suit it.

The Buffalo cruiser and runabout type is built in two sizes—40-60 h.p. and 50-80 h.p. Both are four-cylinder models, the principle difference in the two being that one has 5¼-inch bore and 7-inch stroke, while the larger has 6¾-inch bore and 9-inch stroke.

The cylinders are cast in pairs, thoroughly water-jacketed. All working parts except the flywheel are enclosed. Silent chain drive is employed for operating the camshaft, water pump and magneto. The base and crank chamber are supplied in either iron or aluminum, depending upon the needs of the boat.

The crankshafts, forged from special alloy steel, heat-treated, have large diameter, giving reserve strength and a larger bearing surface. The connecting-rods are drop-forged with removable die-cast bearings at the lower ends, the upper ends being clamped to the hardened and ground steel piston pins which oscillate on bronze bushings in the piston. The flywheel is bolted to a flange which is part of the crankshaft, with the result that it is easy to keep tight and always runs truly. There are two separate systems of ignition—the battery and distributor system for starting and the magneto for running. The cooling system is operated by means of an all-bronze gear pump. Each engine is equipped with an air pump and a bronze plunger bilge pump. Lubrication is by means of a constant-level-splash system with stream feed to the cylinders and bearings. Each time before being used oil is cooled and strained by passing through a water-jacketed container on the after end of the engine.



Port side of one of the Buffalo cruiser and runabout motors, showing the installation of a two-unit self starter

An Aero-Marine Engine

The Twelve-Cylinder Curtiss Power Plant Which Weighs Only Three and a Half Pounds per Horsepower and Delivers 300 H. P. at 1,400 R.P.M.—Duplex Carbureting and Ignition Systems

THE Curtiss Aeroplane Co., of Buffalo, N. Y., has recently placed on the market a twelve-cylinder 5 x 7-inch motor which was designed primarily for aeronautical uses, but which should prove of interest and value to such enthusiasts of motor boating who look for the delivery of large horse-

power and thrust and radial ball bearing is contained in the housing at the left.

As may be learned from the center illustration,

two separate magnetos are used. These are twelve-cylinder Dixie instruments furnishing double ignition, so that there is very small chance indeed that there will be any irregularity in the firing of the cylinders. Two Duplex Zenith carbureters are used, mounted in the V between the cylinders. The valves are of the overhead type operating through rocker arms from the camshaft which is arranged just above the crankshaft.

The quartering



Quartering view of the twin-six Curtiss aeroplane motor which has been adapted for motor boat use. Note the method of mounting

power from a light-weight power plant. Having been built originally for use in aeroplanes, the weights have been kept to the lowest limit consistent with safety, and the engine weighs but $3\frac{1}{2}$ pounds per horsepower, developing 300 h.p. at 1,400 revolutions per minute. All other things being equal, it would appear from this that some remarkable speed records may be forthcoming in the future.

The motor is unusually compact, the extreme overall length being only 80 inches, and the illustrations on this page will perhaps bring out its compactness even better than a recital of its lineal dimensions. Aside from this, the most characteristic feature is the large counterbalanced crankshaft mounted with bearings between each two cranks. The crankpins are $2\frac{1}{4}$ inches in diameter, and the main journals of $2\frac{3}{4}$ -inch diameter. Rigidity has been the keynote of the construction and the bearing caps are fastened not only with eight bolts to each one but are steel-keyed into the crankcase to prevent any lateral movement. Lubrication is efficiently taken care of by individual force-feed entering through the bottom of the various caps where the load on the bearings is greatest. As may be seen from the illustration at the bottom of the page, a large annular

view shows a generous sump which holds oil sufficient for eight hours of normal running, and also makes clear the method of mounting this engine. Seven steel tubes are pressed clear through the crankcase and thus receive all the strain of the mounting. Starting is facilitated by the introduction of a valve release which opens the exhaust valves about an eighth of an inch to relieve compression. The little white pull-handle shown just above the right hand magneto actuates this release. This feature has also another advantage—that of permitting gasoline to enter the cylinders when a hole in the exhaust pipe is primed.

Two of these releases are provided—one for each set of cylinders—and it is stated that when one of them is used, no more effort is required to start the motor than with an ordinary six-cylinder machine of the same cylinder dimensions. The design of the motor is such that a self-starter is readily installed.

Cooling has been very efficiently attended to, the design of the motor lending itself to a thorough job of this sort. As the cylinders are separately cast, the water flows entirely around each one.

The two twelve-cylinder Dixie magnetos furnish double ignition, so that there is small chance of misfiring. The two Zenith carbureters are mounted in the V between the cylinder sets

The large-diameter crankshaft is mounted with bearings between each two throws, and the bearing caps are securely fastened by special methods



Ramon, a new doubled-ended steel car used on San Francisco Bay and powered with a gasoline engine which develops 600 h.p. and weighs 200 pounds per horsepower. The simplicity of the four-cycle gasoline engine as opposed to the complexity of the Diesel type led to the former's adoption

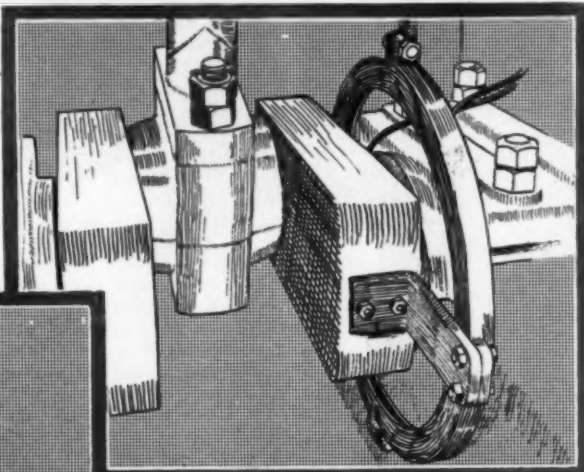
The Largest Gasoline Motor Ship

A New 236-Foot Car Ferry Which Is Powered with a Four-Cycle Motor of the Ordinary Type But of Extraordinary Size—Individual Cylinder Castings Weighing a Ton Apiece

By Charles J. Belden

WHAT is said to be the world's largest gasoline-driven vessel is shown in the accompanying illustrations. Ramon, as she is called, is a double-ended steel ferry boat used on San Francisco Bay

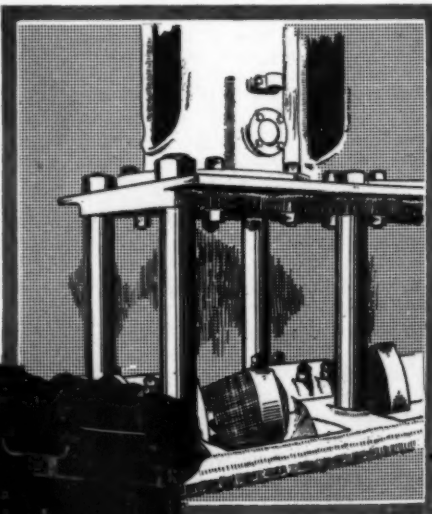
Below, detail of the water-cooled exhaust valves



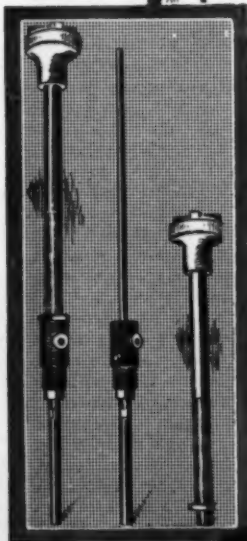
Left, sketch showing one of the centrifugal ring oilers on the crank

ate only on the more expensive gasoline have rarely been built for commercial uses in sizes to exceed 300 h.p. The engine in Ramon measures 46 feet in length and, as previously stated, weighs about sixty tons. It is merely an enlargement of the type of gasoline engine familiar to any motor boat owner, and it was this simplicity in contrast with the complicated Diesel type that led to its construction.

The cylinders are mounted in a line instead
(Continued on page 53)



Open base method of mounting the cylinders



The mammoth 600 h.p. eight-cylinder Union motor with which Ramon is powered is stated to be the largest gasoline engine ever built. An idea of its size may be gained by comparing its dimensions with those of the magneto at the left. The wiring had not been done at the time the picture was taken, but the engine was otherwise complete

FROM

MoToR BOATING READERS

This department of MoToR Boating is maintained for the purpose of giving its readers opportunity to ask questions, reply to other correspondents' communications, and submit ideas, suggestions, opinions or experiences which may be of interest and assistance to motor boatmen. There are no rules governing the department other than that postage must be enclosed when an answer by mail is desired, and that the name and address of the writer must be given in each instance. No anonymous contributions will be considered for publication, but initials or a pseudonym will be substituted for the writer's own name if the request be made. The editor does not, of course, hold himself responsible for statements made or opinions expressed by contributors to this department.

Cleaning a Steel Hull

To the Editor of MoToR Boating:

I recently came in possession of a motor boat, and on going over the hull which is of steel I find that it is in very bad condition. I want to beach it before long and give it a general over-hauling, but prior to painting the hull would like your advice as to what grade of paint to use. Our river here is full of alkali and I am told by some of my friends that lead paint will not hold on steel in this water.

Kindly let me know if you would recommend this copper paint that I see advertised so much.

J. F. J., Little Rock, Ark.

[The hull should be thoroughly cleaned by using a stiff wire brush and then conscientiously scrubbed. If rusty at any place, it should be sanded down with sandpaper until all signs of the rust have been removed and the surface is bright. Then apply two or more coats of red lead in oil, after which paint of any color you require may be applied. Under no circumstances should copper or bronze paint be used on steel hulls.]

Slow Speed With a Steel Boat

To the Editor of MoToR Boating:

Will you kindly help me to solve a problem that is proving to be more or less bothersome?

My boat is a steel craft, 23 feet long by 54 inches beam, semi-tunnel stern, weight about 1,500 pounds, and she is equipped with a 12 h.p. two-cycle engine that has been in use for about two years. The engine is located well forward. When standing still the bow is about 10 inches under water and the stern about 3. I am at present using a three-bladed 18 x 22-inch wheel. The engine and wheel I formerly used in a 30 x 7-foot frame boat with 30 inches draft, which weighed several times the amount of the steel boat; but, strange to say, I obtained as much speed with the larger boat as I do with the smaller—about 7 miles per hour.

Will you kindly advise me if this wheel is suitable under the conditions, and if not, what size and style wheel you think best?

How far from the exhaust manifold can the muffler be placed and still permit greatest efficiency? The muffler is at present at the end of the exhaust pipe under the stern decking.

F. W. H., Fort Lauderdale, Fla.

[We agree with you that speed of only 7 miles an hour is somewhat below the average for an outfit with this power. However, we should expect that a boat only drawing 3 inches of water at the stern would be slightly less efficient than the ordinary type of displacement boat. Even so, we should expect a speed of some-

where around 9 miles an hour with your boat, and we would suggest that you try out a two-bladed wheel of 20-inch diameter and 22-inch pitch.

The muffler should be placed as close to the exhaust manifold of the engine as possible, and we would suggest that you move yours to this position. This may be one cause for your slow speed, and it might be well to move the muffler to this position before experimenting with a new wheel and see how it works out.]

Can You Afford a Cruiser?

To the Editor of MoToR Boating:

I live in New York, I am married and have a three-year-old baby. My wife and I both love the water and love to travel. A conventional two weeks' vacation sets us back about \$150. A summer spent at a moderate resort where I can commute on week ends takes us four months to recover from—financially.

If I invest \$3,000 in a cruiser will it take the place of the modest hotel and the two weeks' "dier"? Can I get a livable boat for \$3,000, a boat that won't make us feel like canned sardines—but one that can take us on long cruises without running us into everlasting debt?

This isn't exact data by any means, but I've asked my questions in a general way in case you wish to answer publicly, for I know there are a lot of men in my general classification who are interested in this matter.

A. B. K., New York City.

[Yes, you can afford a cruiser. You can hardly afford not to own one. This year little family parties have cruised in 30- to 40-foot boats up and down the coast and tidal rivers, through canals to Lake Champlain, the Thousand Islands, to the thousand and one beauty spots of the Great Lakes. This fall the annual southward movement will be far larger than ever before. Sometimes a little family like yours will go, sometimes a group of friends, some in little boats scarcely more than overgrown rowboats, some in houseboats, but the great majority in so-called one-man cruisers, boats 30 to 45 feet in length, with

comfortable berths, good cooking facilities and sanitary arrangements, but including in every instance outdoor space where natural beauty can be absorbed as in no other way. There is just enough work on a 40-footer to give the tired-out business man something to harden him up.

There is a fascination about navigation that will keep his mind off his business and give him a complete mental change.

The "housekeeping" requisite on a boat of this size is light housekeeping in the strictest sense—for everything is so compact and handy on a well-arranged boat that a woman used to camping will turn out a regular meal almost without once leaving her perch at a high galley stove.

There are a lot of bully yacht clubs close to New York whose anchorages afford members every facility of bungalow colonies and some others in addition. These have clean beaches where the kiddies from the anchored fleet are welcome to play and wade to their little hearts' desire.

Even the youngest of these kiddies are fascinated with the working of a yacht, and in times of trouble, such as we went through last summer, there is a heap of satisfaction in the isolation that a yacht alone makes practical.

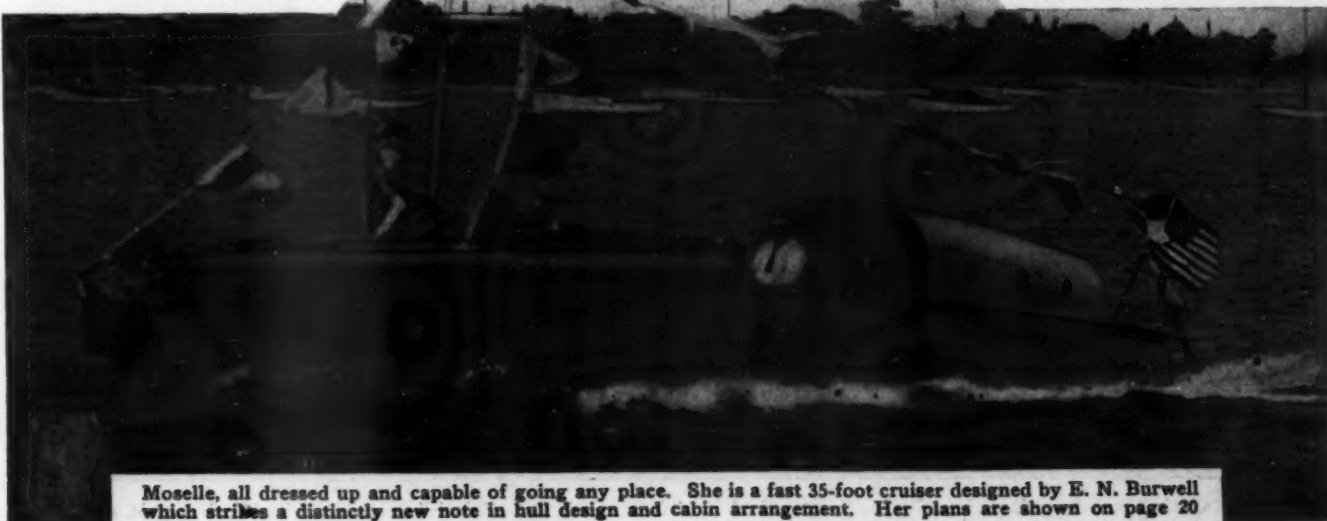
Traveling with children is ever less restful than without them, but with a motor boat they are at home, their routine is not affected, and at stated intervals each day the grown-ups as well as children will find a lot of pleasure in stopping in some little cove to fish or get a run ashore.

Answering your question as generally as you asked it, your interest, depreciation and upkeep will not amount to more than your family's board at a modest summer hotel. If you want the hotel gaiety you can get it at your yacht club or the various other clubs you call at while cruising.

You have at your disposal an opportunity to give unusual pleasure to such friends as you may care to entertain. A meal even on a little vessel that is kept "ship-shape and Bristol fashion" is a novelty to far too many people who ought to have asked your questions.

I have in mind two weeks' flier I am already planning for next year—

I am going to loaf on Lake



Moselle, all dressed up and capable of going any place. She is a fast 35-foot cruiser designed by E. N. Burwell which strikes a distinctly new note in hull design and cabin arrangement. Her plans are shown on page 20

Champlain. We shall get away some Saturday afternoon and run as far as Kingston. On Sunday afternoon we shall continue up to a quiet little backwater a few miles below Albany and then early on Monday get our canal pass and hustle into the Barge Canal.

Sometime on Tuesday we'll make the lake and Tuesday night we shall anchor behind a sheltering island at Thomsons Point and visit for a day or so. Later we shall run for Burlington and for at least two days shall prowl around Shelbourne bay in search of some pickerel and some yellow perch, whose home address I know and for whom a warm welcome will await.

Across the lake is another big delightful bay and further finny friends I'll have to drop a line to. And on the shores of both these bays are the most beautiful colored pebbles my little girl has ever seen, with an occasional arrowhead from Indian days to make material for the stories she loves to hear, and there is Malletts Bay and in the islands to the northward, an old shipyard, "Shelbourne Harbor," with relics from the beginning of steam navigation. There are the historic battlefields and possibly, if time should fortunately stretch, another canal run through a primitive Canada, which few travelers can ever see.

Yes, my friend, you can afford a cruiser—but not necessarily one with shiny brass and electric bells to summon a drink of water.

You can afford a yacht-kind boat that will answer your desire to be somewhere else—that will find you in the fresh of the morning bare-legged washing down her decks—that will find you in the cool of the evening in a comfortable wicker chair—enjoying that satisfied feeling you can get only after a day's work, a hard swim and a man's dinner.

Cost? It will cost you less than your day's cigars to pay for the gas when you dawdle along.

Your food for the most part comes direct from producer to user—you can live on as little or as much as you wish. Get the boat now; don't buy her for speed, but get her because she is strong and well built, seaworthy and comfortable.]

Motors for Government Use

To the Editor of MoToR Boating:

I have been detailed to investigate the subject of the proper type of gasoline engine for small boat use in the various coast defenses, and I have been informed that MoToR Boating has published articles from time to time on the above. Please inform me if it will be practicable for you to furnish me with such articles and the approximate cost of the same, which will include the following and any other data that you may have on the subject:

- (a) The best type of engine most suitable for small boat use, up to and including 25 h.p.
- (b) Two-cycle or four-cycle.
- (c) Two-port or three-port.
- (d) Single- or multiple-cylinder.
- (e) Ignition system.
- (f) Reversing gears.
- (g) Other fuels than gasoline, cost of installation and saving, etc.

The boats are of heavy-duty type about 25 feet long and are used in planting submarine mines, and any information that you may be able to let me have will be appreciated.

R. C. G., Fort Monroe, Virginia.

[We regret that we have no back copies of MoToR Boating on hand at the present time, and therefore cannot supply you with articles which we have published.

However, about the type of engine most suitable for use in small boats up to 25 h.p. there is no hard and fast rule which we could give you for your guidance that would fit every case. Everything depends upon the size of the boat and the service for which it is intended. Generally speaking, if speed is not the major factor, we would recommend a two-cycle motor for everything up to 10 or 12 h.p., and above that amount our preference leans toward the four-cycle. Motors of less than 5 h.p. can be of the single-cylinder, two-cycle type, and up to 12 h.p. should be of two cylinders. For all-around service other than speed, a two-port motor is preferable to one of the three-port type. For rotative speeds greater than 600 r.p.m., three-port is preferable to two-port. Light-weight, high-speed two-cycle motors should be of the three-port type, while heavy-duty, slow-speed motors give greater satisfaction when of the two-port type.

In regard to motors of above 12 h.p., you will find the two-, three- or the four-cylinder models of the four-cycle type very satisfactory. For the lighter boats there are a number of four-cylinder, four-cycle motors on the market of from 10 to 15 h.p., which are giving excellent satisfaction, while for the heavier boats there are a number of two-cylinder, four-cycle motors of between 12 and 20 h.p., which could hardly be improved upon. These motors develop their power at revolutions of from 400 to 600 per minute, while the 10 to 15 h.p., four-cylinder, four-cycle motors develop their power at from 800 to 1,000 r.p.m.

For motors of from 20 to 25 h.p. you will find the four-cylinder, four-cycle type the best. For small boats used for the various Coast Defenses, we would not recommend a motor developing its power at more than 600 r.p.m. Such a motor will weigh in the vicinity of 45 pounds per horsepower.

High tension ignition is now invariably used on small motors of above 10 or 12 h.p., and the use of high tension magnetos is now almost universal, except on motors equipped with self-starters which may use high tension battery ignition. On single and double two-cycle motors of less than 10 and 12 h.p. make and break ignition is very often used. This is especially true where the motor is subjected to solid water, spray or moisture. It is an invariable rule that high tension ignition must be completely protected from the weather and from all sorts of moisture in order to give any kind of satisfaction or be ready for prompt service.

The question of any particular type of reversing gears can be forgotten on motors of 25 h.p. or less. The type furnished with any high-class marine motor today will perform the service for which it is intended, without trouble or attention. The reversing gears for high speed, high power motors are apt to give some trouble, and generally gears of special design are required.

Regarding fuels other than gasoline, we see no object in considering any of these for small boat use for the various coast defenses. It is doubtful whether kerosene or any of the heavier fuels will give you anywhere near the satisfaction that gasoline will, and the saving in cost of operation, unless that boat is to be used constantly, is immaterial. The July issue of MoToR Boating contained an article descriptive of all the kerosene motors on the market; from this you will be able to get an idea of their possibilities. You will probably be impressed with the fact that for the larger pow-

ers strong claims are made by their manufacturers, but for the smaller sizes, we would not recommend such experimenting.]

What Is a Private Yacht?

WE noticed in a recent issue of one of our contemporaries an unanswered query—"What Is a Private Yacht?"—but we are indebted to the Marine Journal of August 26, 1916, to enlighten us—so we quote in full:

"Perhaps the term 'private yacht' may not now be so unanimously frowned upon as it was in former years, as they are today in a sense 'public yachts.' Take for example the sight-seeing yachts that circle Manhattan twice daily and the many motor boats, yachts in many essentials, that carry passengers for hire. These thoughts occurred to us through reading an article in Power Boating this month by J. Walter Scott, who inquires:

"What is a 'private' yacht, pray tell? You've used the term dozens of times, no doubt, never thinking that it is just as bad as if you spoke of your 'private' toothbrush, or your 'private' children, or your 'private' B. V. D.'s! And goes on to point out that while Webster defines a yacht as a craft used for pleasure purposes, that does not necessarily mean that a 10-foot rowboat devoted to such purpose is a yacht. While many yacht clubs hold that any craft equipped with either sail or power is a yacht, no matter if it be not more than 18 feet over all, most yachtsmen do not use this term unless the craft is large enough to have a cabin of some sort.

"The New York Yacht Club goes so far as to require that a yacht must be able whether propelled by sail, steam or power, to accompany the squadron on a cruise along the Atlantic seaboard and to have suitable accommodations for her owner and crew. If a sail vessel she must be 38 feet on the waterline or over and full decked, a reasonable cockpit excepted. If a steamer or motor boat, she must be full decked and 55 feet or over on the load waterline, but 'any yacht duly enrolled previous to May 1, 1910, and yachts built to defend the America's Cup, and not complying with the above sections shall nevertheless be entitled to enrolment.'

"The Eastern Yacht Club's definition is practically the same, with the exception of a reduction in waterline length from 38 to 30 feet."

Builders of Famous Boats

To the Editor of MoToR Boating:

I have read your excellent magazine for four or five years with much profit, and now I should like to ask some information of you. Can you tell me the names and addresses of the designers and the builders of: Disturber IV, J. P. Morgan's Grayling, Miss Detroit, Miss Minneapolis, and Colonel Jackling's Cyprus?

Thanking you in advance for your kindness, I remain,

F. E. S., Detroit, Mich.

Disturber IV, designed by W. H. Fauber, 15 Murray St., N. Y. City; built by Pugh, Pugh Terminals, Chicago, Ill. Grayling, designed by N. G. Herreshoff; built by Herreshoff Mfg. Co., Bristol, R. I. Miss Detroit, designed and built by C. C. Smith Boat & Engine Co., Algonac, Mich. Miss Minneapolis, designed and built by C. C. Smith Boat & Engine Co., Algonac, Mich. Cyprus, designed by Cox & Stevens, 15 William St., N. Y. City; built by Seattle Cons. & Dry Dock Co., Seattle, Wash.



Goeduck, a speedy cruiser of the Pacific Coast. She is a 55-footer with 8-foot 8-inch beam, owned by W. G. Norris, of Seattle, Wash. L. E. Geary designed her and she is powered with an eight-cylinder Sterling engine

New Things For

MOTOR BOATMEN

[Each month many new parts, attachments and fittings, interesting and invaluable to owners of large and small motor boats, are added to the devices already on the market. Announcements of these articles come to us in such numbers that in order to introduce all of them to our readers we have been obliged to omit descriptions and publish only illustrations with short explanatory captions. In doing this, however, we urgently

invite our readers to write us for complete information, as we shall take the greatest pleasure in providing it together with the manufacturers' names and addresses. Do not hesitate to ask us, as we have made special arrangements to take care of this branch of our correspondence and are able to give you accurate information with the greatest promptness.—Editor.



A bridge-controlled searchlight which projects a mellow beam of high fog-penetrating qualities



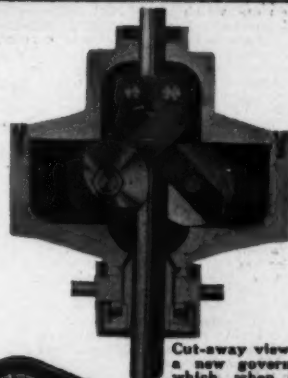
Sectional view of a new vacuum feed tank which sells for \$7.50



Applied to the intake manifold of a motor, this device is stated to effect a great economy in its operation



A special planking clamp which is a great aid to builders. It is strong and easily adjusted



Cut-away view of a new governor, which, when applied to a marine motor, keeps it under perfect control at all times



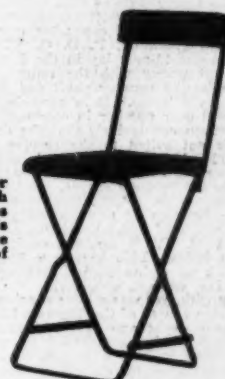
An electric primer for use these coolish mornings. It comes in two sizes and is furnished complete with weather-proof wire and terminals



A carbon remover which operates on simple principles, and, it is said, with great effect. It sells for \$5



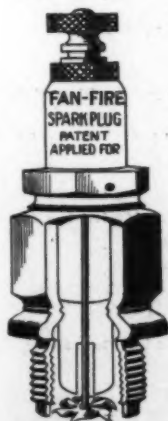
A reliable multiple-feed mechanical oiler for marine usage



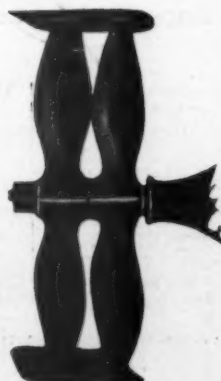
One of a line of steel chairs which fold to the most compact dimensions



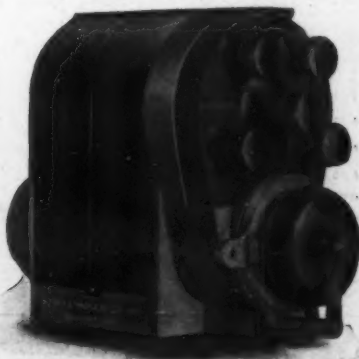
The "Break-Not" hydrometer syringe. The frequent use of an instrument of this nature is a prime requisite in the proper care of storage batteries



A spark plug designed on entirely new principles, with a rotating center electrode. The cost is \$1



A special box type turbine propeller which is declared to be particularly efficient when reversing



A four-cylinder magneto whose construction embodies the most up-to-date principles



A handy wrench which adjusts quickly and grips grimly



A new spark plug constructed with a center member of mica. It is stated to possess great strength and heat-resistance

Do not fail to write to the editor if you desire information concerning any of the above new things

Thousand Islands Cup Goes to Lake George

(Continued from page 22)

Gold Challenge Cup at Lake George in 1914 but was unsuccessful on account of engine and hull troubles. Last year she was entered for the Gold Cup races held at Manhasset Bay, but on a trial trip two days before the first race she caught fire and burned, thus eliminating herself from those contests. In former years Hawk Eye was equipped with a twelve-cylinder Van Blerck motor of some 300 h.p. The two years' experience which her owner had with this outfit was enough to convince him that it was a physical impossibility to design or build a motor of this power along the lines which the manufacturers had followed and have it stand up under the strains which this kind of service demanded. Commodore Judson believed he had a mighty fast hull in Hawk Eye and that with the proper power plant she should be a winner.

For a power plant Hawk Eye's owner chose an eight-cylinder Van Blerck, one of this season's models, with a bore of 6 inches and a stroke of 6 inches, developing in the neighborhood of 200 h.p. at 1,400 r.p.m. This motor was not, strictly speaking, the ideal power plant for a light racing hydroplane, it being better adapted to modern express cruiser work. However, the commodore was well aware of the great number of races which have been lost through lack of consistency on the part of the motors, so he preferred to take a chance on a type which would run and keep running rather than on one which would show extreme bursts of power and speed spasmodically. In his conclusions, Commodore Judson proved that he was correct, for not once during the three days' racing did his motor falter or even show a tendency to lay down. This Van Blerck installed in Hawk Eye was even equipped with a self-starter, and the outfit was therefore several hundred pounds heavier. This is probably the first instance where one of the high-speed hydroplanes has been equipped with a self-starter.

Peter Pan VII is a hydroplane designed by Crouch, produced primarily for the Gold Cup races of 1915, but which was not completed in time for last year's races. As is well known, her power plant consists of two eight-cylinder Sterling motors, driving twin screws. Her underbody is considerably different from the average hydroplane of today. While her appearance at rest is very similar to other racing craft, and even when she runs she does not give the impression of anything out of the ordinary, yet this boat runs on bronze planes, so arranged to reduce the area of the plane surface in contact with the water, as the speed increases. These planes are not enclosed at the sides or end, thus insuring good ventilation when running. The hull is 25 feet 6 inches long by 7 feet 6 inches beam. The helmsman's cockpit is forward and the mechanic's aft. A bow rudder is used and the propellers are located under her hull some four or five feet forward of the transom.

P. D. Q. VI, owned by Alfred Graham Miles, is a 26-footer powered with a twelve-cylinder Van Blerck motor. This boat, although several years old, has accomplished very little of note in her career, as she has constantly run in hard luck. Even in these races for the Thousand Islands cup after many weeks of trials and much grooming, P. D. Q. VI was only able to complete one 11-mile lap in the first race. Something then went wrong with the reduction gear, which in turn broke the counter shaft and the boat was towed to her yacht house. It is very doubtful whether Mr. Miles will ever put her in commission again, as it has been proven conclusively that the design of his power plant is not suited to the service. He and his engineer, Fred Adams, have made every effort to properly strengthen and rebuild the motor, and while this did help out to some extent, yet its design was wrong in fundamentals. P. D. Q.'s actual running time for the one lap was 14 minutes, 47 seconds, which is at the rate of 43.7 miles per hour.

P. D. Q. IV is another craft owned by Alfred Graham Miles. This boat is a 20-footer and is powered with an eight-cylinder Sterling motor. She was hardly fast enough, considering the company she was running with, yet was a very consistent performer.

The race course of the Thousand Islands Yacht Club is without doubt one of the fastest in the country. While not admirably suited from a spectator's standpoint, owing to its length, yet from the viewpoint of the contestant it cannot be equaled anywhere. It is

doubtful whether greater care could be exercised in determining the accuracy of a race course. This particular course has been surveyed and resurveyed, chained off on the ice, triangulated and its length measured to an inch. Three full times around the course measured exactly 29 nautical miles. The start was a straightaway over a line just inside one of the turning buoys and the boats also finished on a straightaway over this line. This made the course each day 1,731 feet less than three full turns, or 33,066 statute miles. During the race the committee and even the contestants believed that the course was 29 statute miles long, until the speeds of the boats were figured on this basis. Naturally the owners and drivers were very surprised and chagrined at the slow speeds their boats were showing and it was not until the committee procured a large scale government chart of the St. Lawrence and by locating the turning buoys, together with the start and finish lines on this chart, and by scaling off the distance, that they found the length of the course to be very close to 33 statute miles. However, so careful was the committee, they would not permit any official speeds to be announced until the records of the official surveyor had been examined, when it found the course had been correctly laid out in nautical miles instead of statute miles, as had been assumed. As stated above, the surveyor's records showed the course to be 33,066 statute miles.

The first race, which was scheduled to start at 4 o'clock of the afternoon of August 15, was postponed for one hour on account of rough water. About an hour and a half before the time scheduled for this first race the wind was blowing half a gale from the south, and the committee, after going over the course, decided that it would be suicidal to send the light racing craft out under existing conditions. A postponement of one hour was decided upon, and by the time the preparatory signal was given the wind had flattened out to almost nothing, although there was some sea on.

The little P. D. Q. IV was over the line 12 seconds after the starting gun, followed about 10 seconds later by the larger P. D. Q., and 5 seconds later by Peter Pan VII. Hawk Eye went across 49 seconds after the gun. At the finish of the first lap the superiority of Peter Pan VII from a speed standpoint over the rest of the contestants was very evident. This boat was 38 seconds ahead of Hawk Eye, one minute and 22 seconds ahead of P. D. Q. VI, and leading P. D. Q. IV by 3 minutes 31 seconds.

Soon after completing the first turn, P. D. Q. VI's power plant failed and she dropped out of the race. At the end of the second lap the same relative position held, except that Peter Pan VII had increased her lead to nearly 3 minutes over the second boat, Hawk Eye, and was 8 minutes ahead of P. D. Q. IV. Peter Pan finished the course in 39 minutes 44 2/5 seconds, which is at the rate of just 50 statute miles an hour. Hawk Eye came in at 5:45:42, showing a speed of 43.5 miles an hour, and P. D. Q. IV's time of finish was 5:02:57 3/5, an average speed of 38.1 miles an hour.

In the second race a remarkable condition developed. When the preparatory signal was given 5 minutes before 4 o'clock, Peter Pan VII was the only craft within sight of the judges' boat, but just before the starting signal was given Hawk Eye and P. D. Q. IV were seen leaving their boat-house, proceeding full speed up the river. They circled and came down towards the starting line, giving everyone the impression that it was going to be an excellent start. The gun went promptly on time to the second and Hawk Eye shot across the line only 23 seconds from the gun, with Peter Pan VII 17 seconds behind her. The prospects for a close and exciting race could not have been better. Everyone was enthusiastic over the excellent start of Hawk Eye, but she had hardly proceeded down stream half a minute before she turned abruptly about, circled the committee boat and went up-stream at full speed. The violent gesticulations of the committee directed at the crew of Hawk Eye were not noticed and in a very few seconds Hawk Eye was a mile up-stream, sticking close to the stern of P. D. Q. IV, which appeared also to be playing tag with herself. Several times both boats came down toward the starting line, but each time turned and went

away again. It was not until nearly 5 minutes after the gun that the two boats approached near enough to the line to be signaled to, but finally their crews understood the wireless messages of the committee and at 4:44:49 P. D. Q. IV dashed down the river followed 6 seconds later by Hawk Eye. What had happened was that the helmsman of P. D. Q. VII had missed the preparatory signal entirely and had mistaken the starting gun for the former. Commodore Judson, driving Hawk Eye, was well aware of the experience and ability of P. D. Q. IV's helmsman and had decided that his best game would be to follow him closely and forget about starting signals. He figured that such a procedure would give Hawk Eye the best start and in this way he could get her over the line only a few seconds after the gun. He did not assume that such a thing as an error was possible on the part of P. D. Q. IV, but his conclusions, while they cost him nearly 5 minutes of time, really amounted to nothing, as Peter Pan VII became disabled after the first round and Hawk Eye was able to win the race in spite of her handicap.

After completing the first round in 14 minutes 11 seconds, Peter Pan's gasoline tank and fuel pipe installation parted company, so that nearly a full tank of gasoline worked its way into her bilge before the flow could be checked. For nearly an hour her crew worked frantically to repair the fuel line in order to get the boat once again into the race. They were successful in their efforts, and while they did not finish until 5:22:12, it put them in second place in the series and gave them a chance for the trophy, should they win the next day's race.

For the third day conditions were ideal. There was hardly a ripple on the water and the patrolling by the officers and crew of the Coast Guard Cutter Morrell, under Capt. Carmine, were so excellent that prospects for making a speed record were never better. All the boats made a wonderful start, P. D. Q. IV getting over the line only a second after the gun, with Hawk Eye 10 seconds late, and Peter Pan VII only a fraction of a second after her. Peter Pan VII completed the course in 39 minutes 10 2/5 seconds, which is at the rate of 50.2 miles an hour. Hawk Eye came in at 42:34 4/5 and P. D. Q. IX at 48:24 3/5. The speed of these two boats was 46.6 and 41.4 miles an hour, respectively.

As a tie had now been established between Hawk Eye and Peter Pan VII, each boat being credited with thirteen points for three days' racing, it was decided that the tie should be run off at once. It was agreed that a start would be made at 5:30 and the boat which completed one lap of the course first would be entitled to the trophy. The preparatory signal was given at 5:25, and Peter Pan VII and Hawk Eye both appeared ready to start. The balls on the committee boat dropped, one minute apart, indicating to the drivers how much time remained before the starting signal. There was hardly a minute to go before the starting signal, when it was noticed that Peter was in trouble. Something had gone wrong this time with her clutch, but her game crew, Fred Floyd and Jack Schraefel, were making every effort to get things in shape. They could be seen frantically breaking off some unessential part of the motor, evidently in an effort to obtain a substitute for the broken member.

Hawk Eye went over the line 11 seconds after 5:30 P. M., but it was 2 minutes and 47 seconds before Peter Pan could make a start. Everyone agreed that if the New York boat was ever in her life to be let out, now was the time to do it. Down the river she went, almost hidden in a mass of foam and spray, but soon it was apparent that the handicap was too much for her, for Hawk Eye was seen 5 miles down the river, approaching the finish line at race horse speed. Peter Pan VII was hardly in sight when Hawk Eye dashed across the line 13 minutes 38 1/5 seconds after the starting gun. Peter Pan's finish time was 15:07 4/5, but her actual running time had been only 12:09 4/5. When her speed was calculated it was found to be 53.33 miles an hour, a figure only bettered in competition by the famous Disturber IV last year in the Wrigley Trophy races at Chicago, when her best speed for the 30-mile race was 54.326 miles an hour.

Complete Summary of the 1916 Races for the A. P. B. A. Gold Challenge Cup Held at Detroit, September 2, 4 and 5, with Elapsed Times for Each Lap—Course 30 Nautical Miles; Laps, 5 Nautical Miles

First Heat—Start 4:00 P.M., Sept. 2											Second Heat—Start 4:00 P.M., Sept. 4											Third Heat—Start 4:30 P.M., Sept. 5										
Boat	Club or Owner	Motor	H. P.	Actual Start	1st Lap	2nd Lap	3rd Lap	4th Lap	5th Lap	Total Time	Actual Start	1st Lap	2nd Lap	3rd Lap	4th Lap	5th Lap	Total Time	Actual Start	1st Lap	2nd Lap	3rd Lap	4th Lap	5th Lap	Total Time								
Miss Minneapolis*	Minneapolis B. A.	Sterling	250	4:00:13	0:57	0:56	0:56	0:53	0:51	44:41	4:00:11	7:03	6:47	7:10	6:56	6:51	41:46	4:30:14	6:54	6:53	6:51	6:54	6:14	41:21								
Miss Detroit†	Miss Detroit P. B. A.	Sterling	250	4:00:25	8:33	7:51	7:43	8:31	7:44	47:28	4:00:16	7:08	7:02	6:55	7:03	6:51	41:05	4:30:17	6:54	6:52	6:52	6:50	6:46	41:39								
Hawk Eye	A. L. Judson	Van Blerck	250	4:00:40	8:38	7:54	7:43	7:48	7:47	47:33	4:00:16	7:06	7:00	7:38	7:41	7:37	46:24	4:30:28	7:39	7:33	7:37	7:45	7:46	49:49								
Peter Pan VII	James Simpson and Jack Bickell (Col. Y. C.)	Sterling (3)	500	4:01:41	9:40	8:58	7:33	6:58	6:54	44:55	4:00:15	7:12	7:04	6:53	7:00	6:57	42:11	4:30:22	7:39	7:35	7:18	7:38		DID NOT FIN.								
Baby Marold	C. H. Willis (Detroit B. C.)	Van Blerck	600	4:00:15	8:02	7:33	9:50	8:39	9:33	53:14	4:01:13	6:14												DID NOT START.								
Miss Hamtramck	Dol Rey M. B. C.	Maximotor	100	4:00:31	9:33					DID NOT FINISH.														DID NOT START.								
Average speed of Miss Minneapolis—46.3; fastest lap, Peter Pan VII—50.99.											Average speed of Miss Minneapolis—49.4; fastest lap, Baby Marold—55.35.											Average speed of Miss Detroit—60.0; fastest lap of Miss Minneapolis—55.78.										

Boat designers—C. C. Smith Boat & Engine Co., Miss Minneapolis; Miss Detroit; John L. Hacker, Hawk Eye; Miss Hamtramck; Crouch Bros., Peter Pan VII; Jack Beebe, Baby Marold.

* Average speed for 30 nautical miles—42.3 = 48.6 statute miles an hour.

† Average speed for 30 nautical miles—41.3 = 47.5 statute miles an hour.

‡ Time reckoned from crossing starting line.

Summary of Mile Trials for the A. P. B. A. One-Mile Championship of North America

SPEED IN KNOTS								SPEED IN KNOTS							
1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run	Average		1st Run	2nd Run	3rd Run	4th Run	5th Run	6th Run	Average	
Miss Minneapolis	53.59	52.03	54.53	51.95	54.50	52.53	53.110 = 61.093 stat. m.p.h.	Miss Detroit	48.75	48.68	48.90	48.74	48.69	48.79	48.559 = 52.978 stat. m.p.h.

Winning the MoToR Boating Trophy

The Story of the Express Cruiser
Race from New York to
New Bedford

Countess, the Unbeatable V-
Bottom, Breaks Another
Record

Photographs by Rosenfeld



THE long distance express cruiser race for the trophy offered by MoToR Boating has been run and won. From the standpoint of number of contestants it was not the success it should have been. There were six entries, only three of which showed up for the start while one of them refused to cross the official starting line, the owner's excuse being that his engine manufacturers had failed to send him a service man until the day before. However, he did start on a parallel course in an attempt to outrun the competitors, but he became an also-ran in such a short time that he was soon lost astern in the haze.

Of the two official starters, Countess and Boomerang II, only the former finished, Boomerang II withdrawing at New London. For the eighty-odd miles which the race lasted

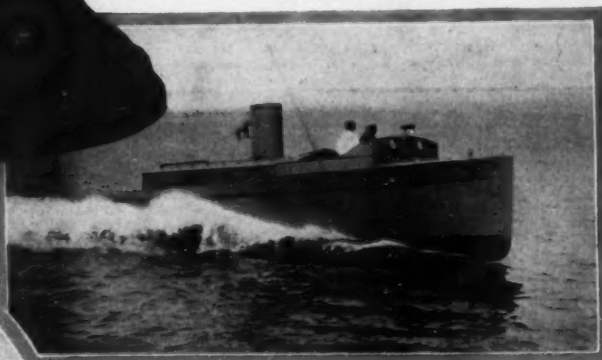
Countess, was not called upon prowess, as her dropped out at However, she m.p.h. from Light to Bart-

unfortunately, to show her true only contender New London. averaged 29½ Execution letts Reef

it was nip and tuck between the two, with Boomerang II holding the lead for the first three hours but finally yielding to the staying qualities of the reliable Countess.

But what the race lacked in number of starters and enthusiasm was more than counterbalanced by the conclusive proof which it brought forth of the superiority of the V-bottom type of underbody over the round bilge boat. This was perhaps the first instance in the history of motor boating

MoToR
Boating's
silver
trophy



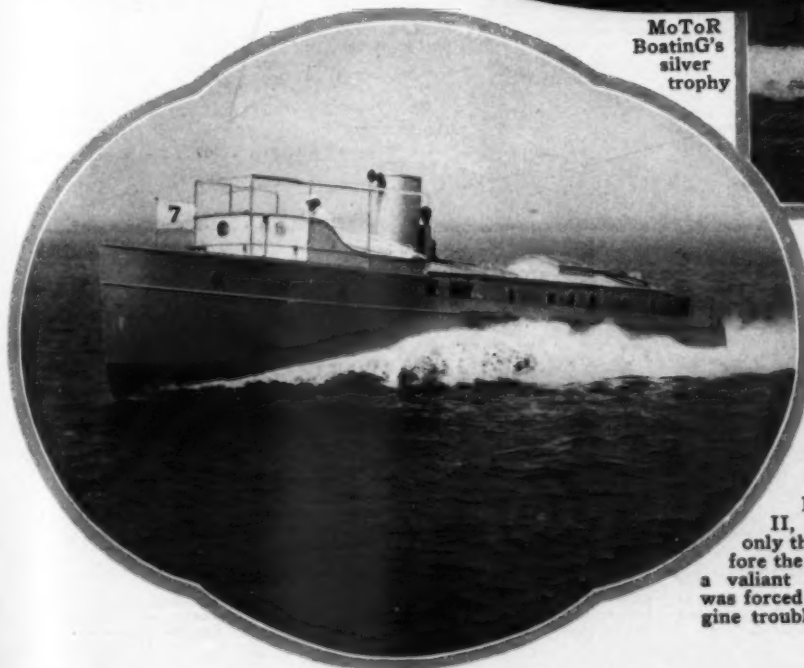
Caddy II started unofficially and ran along for a while, but gradually fell back into the encircling haze

that two cruisers of practically the same principal hull dimensions as regards length, beam and displacement, powered with exactly similar power plants, but of exactly opposite underbody principles, had ever been brought together for a test of speed.

It is to be regretted that the round-bilge boat withdrew before open water was encountered so that there was no real chance for comparison as to seaworthy qualities. However, Countess has so proven all season and again proved in this race that she is seaworthy in every sense, that it would be hard to even conceive that her competitor could have bested her from this standpoint.

Boomerang II, completed only the night before the race, made a valiant effort, but was forced out by engine trouble

(Continued on page 56)





Putting the finishing touches on a few of the products of the Fay & Bowen Engine Co., up at Geneva, N. Y.

Ericsson Appoints Frisco Agent

The Ericsson Mfg. Co., of Buffalo, N. Y., has recently appointed the F. Somers Peterson Co., of 60 Pine St., San Francisco, Cal., as its California agent. This concern will have on hand a complete assortment of sample magnetos and will maintain a service station for the benefit of Berling users in its territory.

Albany Corp. Changes Business Policy

It has recently been announced that the Albany Boat Corporation, of Watervliet, N. Y., is entering upon a new business policy of building boats from designs of any naval architect instead of those from Mr. Hacker exclusively. This, it is stated, has no other significance than a change of business policy, and while the concern has appointed Elliott Gardner



Spray, which with a 12 h.p. Kermath, won the silver cup and champion flag in the Class A races of the Day Ray M. B. C., at Put-In Bay. She is owned by Dr. Hackett, of the Solvay Hospital, Detroit, Mich.

as designer, it will continue to build many Hacker boats as well. Mr. Gardner was formerly assistant to Mr. Hacker.

Interesting Activities of Scripps

The Scripps Motor Co., of Detroit, Mich., which has reason to be proud of its large export business, has recently taken steps to give better service to its foreign friends in the establishment of an export office in New York City. Offices have been leased in the Whitehall Building, 17 Battery Place, and the entire Scripps export department moved there. Ray V. Warman, secretary of the firm, has entire charge of this branch of the business and personally directs not only the sales, but the actual forwarding of the export shipments as well.



A 30-foot cruiser owned by the Port Commission, Honolulu, Hawaii. Hilo Pilot is powered with a 40-60 h.p. Buffalo cruiser-runabout engine which gives her a speed of 12 m.p.h.

Almost coincidentally with this change comes the announcement of Henry P. Hellmuth's accession to the position of domestic sales manager. Mr. Hellmuth has directed the sales of the Gray Motor Co. for the last eight years and brings a most successful record and a keen enthusiasm with him. His advent to the Scripps company will enable its treasurer, T. F. W. Meyer, to devote his entire attention to financial, production and engineering matters.

Of equal interest with the above announcements are the rumors which have lately been going around concerning an entirely new Scripps model for the 1917 season. While not a racing machine in the strict sense of the term, it is reported that this engine will be a high-power high-speed type suitable for runabouts and express cruisers. Further information concerning it will be published in subsequent issues.

Fulton Moves to New Location

The Fulton Mfg. Co., of Erie, Pa., has just moved to a new location in Erie, and in so doing has discontinued its jobbing machine business which was formerly carried on in connection with the building of Fulton marine engines. The Fulton name plate has appeared on gasoline engines almost since the foundation of the industry, but latterly the manufacturing company has been devoting more of its attention to the production of kerosene motors. Fulton engines equipped with the kerosene-burning device have been used largely in Newfoundland, where, we are informed, the operators start them directly on kerosene, merely priming them with gasoline.

Three M.E.'s for McQuay-Norris

The McQuay-Norris Mfg. Co., of St. Louis, Mo., has added three mechanical engineers to its sales force in the field. Herbert H. Cummings will be located in Chicago, Russell B. Pratt in Milwaukee and Fred L. Stevenson in Detroit, and all of these earnest workers will direct their best efforts towards the extension of the Leak-Proof idea.

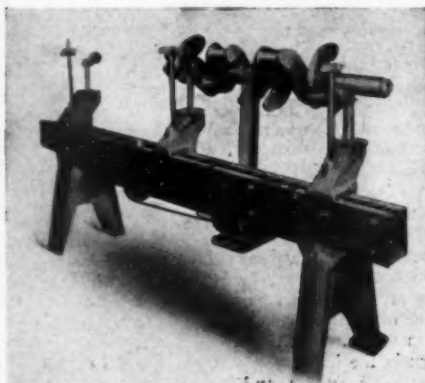
Frisco Standard Absorbs Corliss

In an announcement sent out recently, the Standard Gas Engine Co., of 1 California St., San Francisco, Cal., made known its purchase of the entire plant and business of the Corliss Gas Engine plant, builders of the well-known Corliss gas engine. The Standard company purposes continuing the manufacture of Corliss engines, and

will also take care of any repairs or parts that may be required by the present owners of these engines.

Balancing the Sterling Shafts

Counterbalanced crankshafts, which have been successfully used on some of the higher grade motor cars, were introduced to the marine field by the Sterling Engine Co., of Buffalo, N. Y., which first incorporated it in the six-cylinder Model F machines. The four and the eight in this series are now fitted with this type of crankshaft, making it universal



The delicate machine on which Sterling counter-balanced crankshafts are trued for perfect running balance at all speeds

with the Sterling F line. Counter-weights are electrically welded to the cheeks of the shaft and a running balance is obtained by means of the machine here illustrated. In this illustration a four-cylinder shaft may be seen in position, although the machine can also accommodate a six- or eight-cylinder shaft. By belt drive from an electric motor the shaft is rotated at varying speeds, and the degree which the shaft is out of balance is determined by the amount of oscillation of the indicators on the supports to the shaft. When the shaft is in perfect running balance these indicators remain motionless in the center of a sector. It is a well-known fact that a rotating body may be out of running balance at low speed, in perfect balance at a higher speed, and out again still higher up the scale. It is, therefore, necessary to obtain a perfect running balance at all speeds and in all parts of the shaft, which necessitates the most expert and scientific treatment. This simple machine facilitates matters, however, and before the shafts are passed by the inspectors the centrifugal forces present in all rotating bodies are equalized and the desired balance obtained.

Van Blerck Gives Satisfaction in Big Auxiliary

The owner of Mariette, a 109-foot schooner yacht, has written to the Van Blerck Motor Co., of Monroe, Mich., to express his perfect satisfaction with the eight-cylinder Van Blerck which he has placed in her as auxiliary. This yachtman, Jacob F. Brown, states that his schooner is driven at a regular cruising speed at 8 knots with the motor turning at 775 r.p.m., although the boat weighs 128 gross tons. At a speed of 875 r.p.m., 8.4 knots is reached without difficulty. The longest run at the first mentioned speed has been one of five hours' duration.



Henry P. Hellmuth, newly appointed domestic sales manager of the Scripps Motor Co.

A Frisbie-Won Long-Distance Race

Frisbie-powered craft have been winning many events this year, but the manufacturers inform us that one of the most notable races was that won by the hunting cabin cruiser of Wm. T. Perkins, of Pawtuxet, R. I., with his three-cylinder Frisbie plowing through the troubled waters of the Sound for fourteen hours on end. This was the long distance race of the Rhode Island Y. C.'s run early in the season, and it brought out several entrants. Mr. Perkins' boat, which has an A. P. B. A. rating of 37.98, started along toward dark, and so was obliged to conduct most of the race in the pitchy blackness of a moonless night—and the skipper, who ought to know, says that it was some black. Speaking of pitch, the water tanks had been painted with it, and it, contributing its flavor to the drinking water, rather marred the perfection of the midnight coffee.

But such minor tribulations counted for nothing against the splendid running of the engine which turned her 500 r.p.m. right through the night and gave the boat an average of a little over 8 miles per hour. During the run nineteen gallons of gasoline were consumed and two gallons of oil, and the motor, which has 4 3/4 x 5-inch cylinders, developed the top of her 12-18 h.p. throughout the run.

The course lay from off the Rhode Island Y. C. at Pawtuxet, out past Jude and across the Sound to the northwest buoy at Block Island and return, and although Mr. Perkins' boat reached the buoy fourth, he romped home a winner.

Golden Glow Searchlights

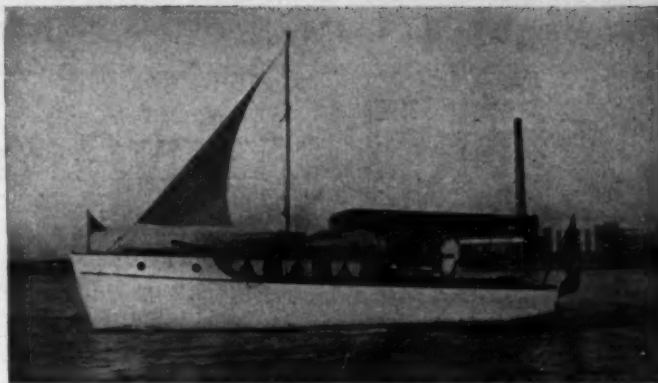
The Electric Service Supplies Co., of 17th and Cambria Sts., Philadelphia, Pa., since its purchase of the Golden Glow searchlight from the Esterline Co., of Indianapolis, Ind., has done much to perfect its high aims for unequalled service in this line. All of the heavy machinery and other equipment has been

i. e., the violet and the blue, and passes all the colors below it. The violet and blue rays are those which are most fatiguing to the human eye and they have their effect upon the eye, impairing its efficiency, even when one is not looking directly into a bright light, but has his position behind it, watching along the beam which it projects. The eye being relieved of this strain, the manufacturers assert, the operator of a Golden Glow searchlight is better able to pick out detail in distant objects than he is with a white light of equal candle-power.

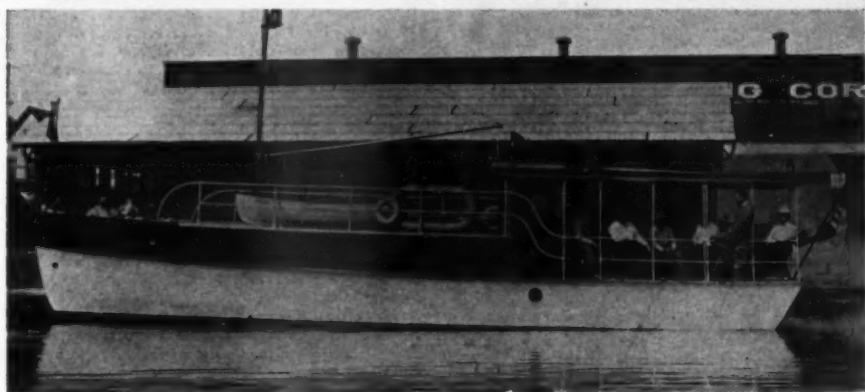
With a polished glass mirror reflector and a lamp of 100 watts burned at normal efficiency, these searchlights, it is stated, enable the observer to distinguish ordinary objects at a distance of from 900 to 1,200 feet without difficulty, whereas objects of a light color, such as piles, buoys and persons in light clothing, can be seen from 1,200 to 1,500 feet.

Increase in Price of Twin-Sixes

Owing to the increase in the cost of materials and



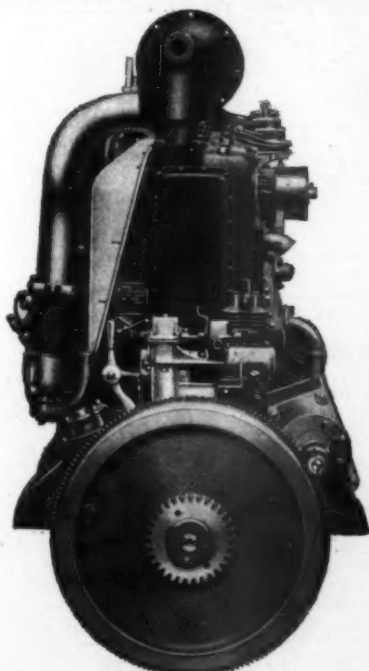
The winner of the 115-mile ocean race of the Rhode Island Y. C. She is owned by Wm. T. Perkins, of Pawtuxet, R. I., who has the highest praise for the three-cylinder 12-18 h.p. Frisbie motor with which she is powered



Colleen, a 45-foot raised-deck cruiser recently built by the Great Lakes Boat Building Co., of Milwaukee, Wis., for Ralph A. Rogan, of Cincinnati, O. She is extensively used for cruising on Lake Michigan

installed in the Philadelphia factory, and is now in full operation. A research department has been organized further to develop this business, and systems have been installed to assure quick production and delivery.

Golden Glow searchlights and projectors are the result of much scientific research and study. Great emphasis is placed by the manufacturers on the



End view of the Duesenberg eight, which is rated at more than 400 h.p.

color of the light the Golden Glow products project—a golden yellow which is non-blinding and highly capable of penetrating fog and moisture. This is obtained through the use of a colored glass lens which subtracts from the beam of white light given by the incandescent bulb all of the rays above the green,

labor the Van Blerck Motor Co., of Monroe, Mich., has been obliged to raise the price of its Model H and Model HH Twin-Six motor from \$6,250 to \$8,000. This increase, it may be said, will not throw consternation into the camp of single-kicker owners.

The Eight-Cylinder Duesy

The eight-cylinder 6 3/4 x 7 1/4-inch Duesenberg marine engine, an end view of which is shown in the accompanying illustration, is rated by its manufacturer, The Loew-Victor Engine Co., to develop 400 r.p.m. at 1,500 r.p.m. It is interesting to note that at the time this rating was determined it was necessary to use a single-point magneto, for it was impossible to obtain the specified two-spark instruments. However, in spite of this deficiency in equipment the manufacturers point out that the eight-cylinder machine has developed from 410 to 430 h.p. in the tests conducted by M. M. Whitaker, independent of their own organization. Such a show of power makes these motors especially suitable for express cruisers, and their simplicity is such that two of them can be installed at a minimum cost.

Lady Rassendyll

This hifalutin name has been given to the attrac-

tive Albany runabout owned by the actor, James K. Hackett, and has its original in The Prisoner of Zenda, the play which was for many years the successful vehicle of Mr. Hackett's genius. Lady R. (etc.) is a 30-footer, built by the Albany Boat Corporation of Watervliet, N. Y., and sold by this firm's agents, the St. Lawrence River Motor & Machine Co., of Clayton, N. Y. She is a sister of Go Some which won the free-for-all races at Burlington last summer, and has a guaranteed speed of 35 m.p.h. The boat is mahogany built and has a seven-passenger cockpit, and is powered with an E-6 Van Blerck engine.

John L. Hacker, N. A.

As of interest in connection with the announcement on page 36 of the change in the business policy of the Albany Boat Corporation, we take pleasure in stating that John L. Hacker, N.A., well known as a designer of fast hydroplanes, runabouts, etc., has moved his office from Albany, N. Y., back to Detroit, Mich. While with the Albany Corporation, Mr. Hacker designed as well as built a large number of successful craft for some of the most discriminating people in this country.

Mr. Hacker has been in the speed game entirely for the past ten years, having designed boats of all types from a 16-foot speeder to a 75-foot ferry boat. Among some of Mr. Hacker's boats were the famous Kitty Hawk, Oregon Kid, etc. It is said that Kitty Hawk was the first boat on record of that type in this country to make over 35 miles, and that Kitty IV was the first 50-miler. Oregon Kid is still the fastest hydroplane per h.p. All of these boats were equipped with the bow rudder and the stern strut, of which records will show that Mr. Hacker was the originator. Mr. Hacker will specialize in the design of boats of the refined V-bottom type only, as he has worked along this line for the past five years. He will issue a catalogue of stock designs, and will design to order boats with guaranteed speeds up to 65 miles.

Wire Drag Discloses Dangers Near Salem Harbor

Wire-drag work in the approaches to Salem Harbor, Mass., which was begun by a party sent out by the United States Coast and Geodetic Survey in May of this year, has resulted in the discovery of a number of uncharted and previously unknown pinnacle rocks and shoal spots with depths less than charted, some of which constitute serious dangers to navigation. The most important of these are a 20-foot rock in the main ship channel, where 7 fathoms were charted southward from Johns Ledge, and a 24-foot shoal east of Newcombs Ledge, where 7 1/2 fathoms were charted.

As it was announced that the Navy Department intended sending the battleship Vermont to Salem on July 4, the results of the wire-drag work were furnished by the survey to the Navy Department, the dangers discovered were buoyed and a safe anchorage marked. The dangers discovered decrease the available width of the main ship channel considerably. The examination is not reported as completed, and additional information will be furnished, as soon as received, through the Notices to Mariners.—From the Commerce Reports.



The Maharaja of Mahisadal, an Indian potentate, owns this 30-footer and employs her for towing his houseboat. She was built in Calcutta, and is powered with a two-cylinder 16-12 h.p. Standard engine. This Standard was a pioneer in that part of India, but it has been productive of several other orders

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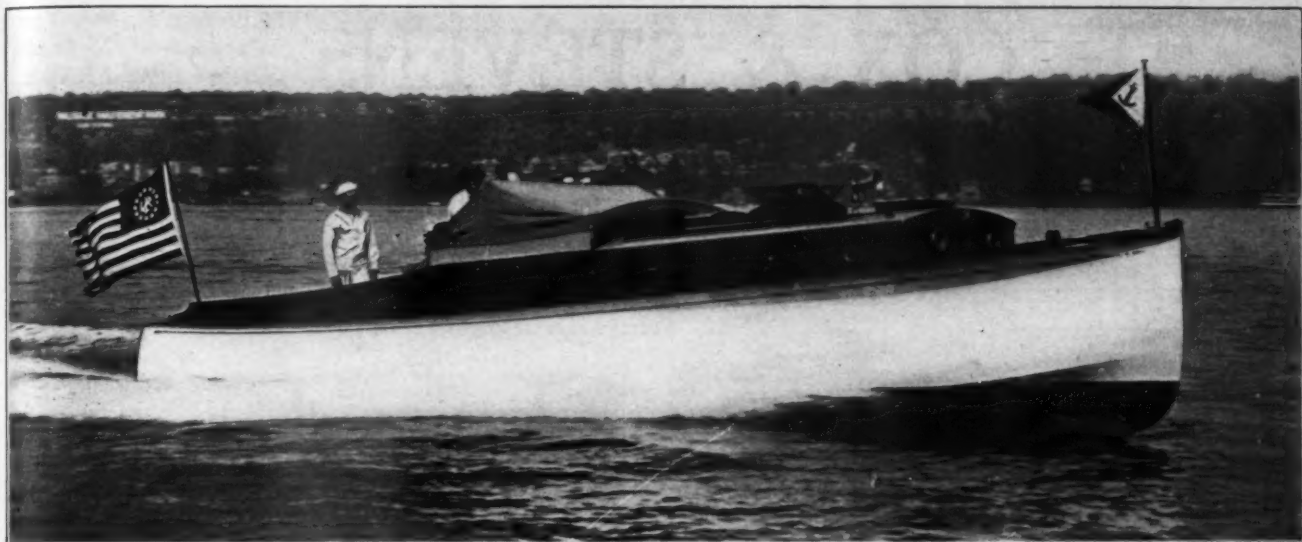


Photo by M. Rosenfeld, New York

She Beat the Bay State Limited —and She's Valsparred

THE express cruiser "Countess" shown here has just hung up a new and unique motor boat record. She left 129th Street, New York, just as the Bay State Limited of the New Haven Railroad was leaving Grand Central Station. "Countess" arrived at New Bedford, Mass., 25 minutes before the Bay State Limited. 187 Miles in 7 Hours, 32 Minutes. A worth-while boat, isn't she?

And her bright work is Valsparred!



We do not claim that the Valspar on her decks increased her speed. But isn't it wonderful how the owners of the best boats insist on Valspar! That's because Valspar gives *real service*.

Only the best varnish belongs on a boat like "Countess." And her builder used Valspar—the long oil, waterproof varnish that looks well, stays looking well and never turns white.

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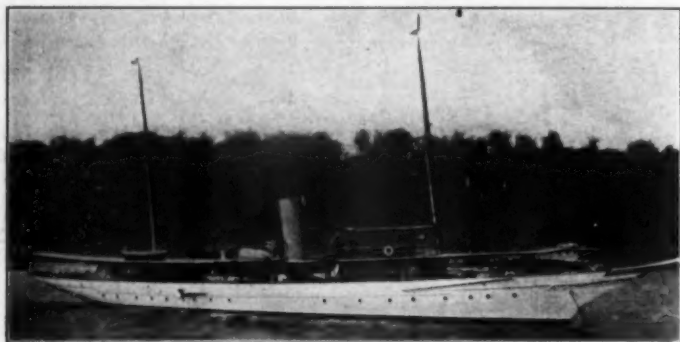
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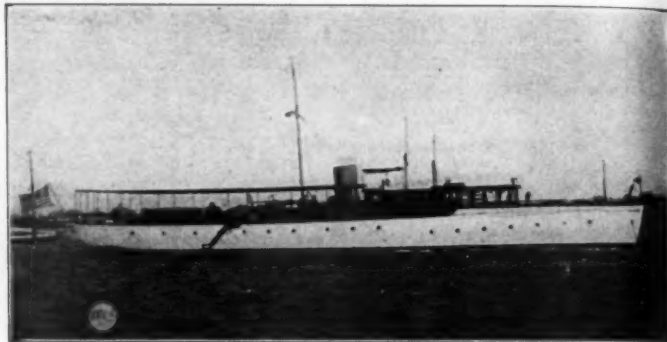
COX & STEVENS

15 William St., New York
Telephone—1375 Broad
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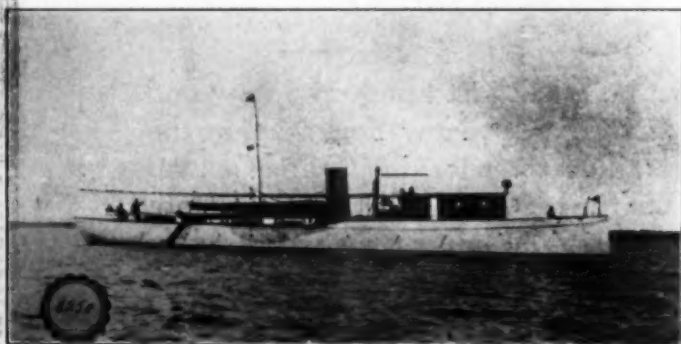
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



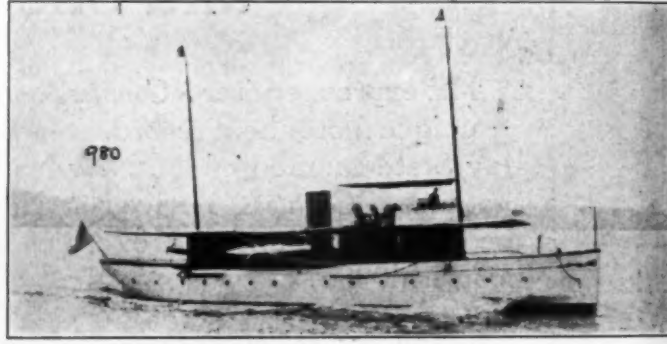
No. 229—For Sale—Fast, twin screw, steel steam yacht, 135 x 18 x 7.6 ft. Speed up to 18 miles. Dining saloon and social hall on deck. Five staterooms, two bathrooms, etc., aft. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.



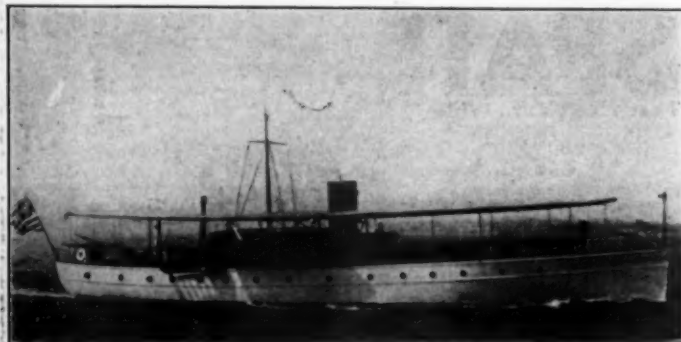
No. 885—For Sale or Charter—Handsome, fast 120 ft. twin screw steel power yacht. Speed up to 18 miles. Large dining saloon on deck, three double staterooms, main saloon, two bathrooms, etc. Price attractive. Cox & Stevens, 15 William St., New York.



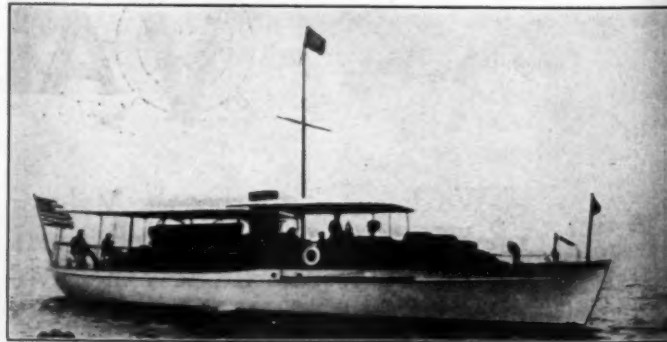
No. 1250—For Sale or Charter—112 ft. twin screw cruising power yacht (now has after deckhouse). Speed 14-16 miles. Large accommodations; dining saloon on deck forward; social hall in after deckhouse; four double staterooms, etc. All conveniences. Cox & Stevens, 15 William St., New York.



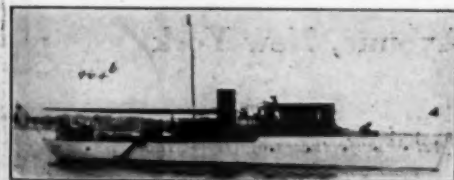
No. 980—For Sale—Steel twin screw cruising power yacht, 98 x 16 x 5 ft. Speed 14-16 miles. Dining saloon and social hall on deck; four staterooms, bath, two toilets, etc. In commission. Attractive price. Cox & Stevens, 15 William St., New York.



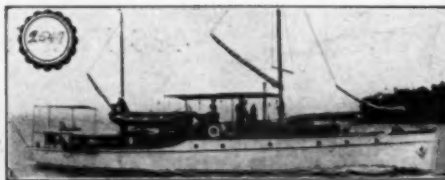
No. 2247—Exceptional Bargain—90 ft. twin screw, flush deck, power yacht; very able craft. Speed 13-14 miles. Large saloon, three double staterooms, bath, etc. In commission. Cox & Stevens, 15 William St., New York.



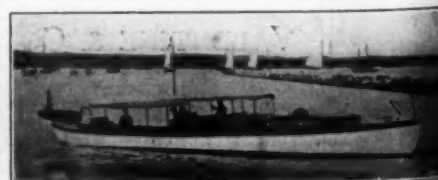
No. 2428—For Sale or Charter—Attractive gasoline cruiser, 75 x 14 x 4 ft. Built by well known firm 1913. Speed 12 miles. 60/90 H.P., 6-cyl. Sterling motor. Dining saloon and galley forward; two double staterooms and bath aft. Cox & Stevens, 15 William St., New York.



No. 464—For Sale—80 ft. cruising power yacht; speed 13-15 miles; 100 H.P., 6-cylinder Standard motor; large accommodation; excellent condition. Price low. Cox & Stevens, 15 William St., New York.



No. 2547—For Sale or Charter—Handsome, up-to-date gasoline cruiser, 64 x 12.6 x 4 ft. Speed 11 1/2 miles; 60 H.P., 6-cylinder, heavy-duty motor, controlled from bridge. Dining saloon, toilet and separate galley forward; engine room amidships; double and single stateroom and bathroom aft. Cox & Stevens, 15 William Street, New York.



No. 2825—For Sale at Low Figure—Day cruiser; 60 x 10.9 x 3.3 ft. Speed 12-13 miles; 40/60 H.P., 6-cyl. Standard motor. Saloon with two transoms, toilet, etc. Excellent condition. Cox & Stevens, 15 William St., New York.

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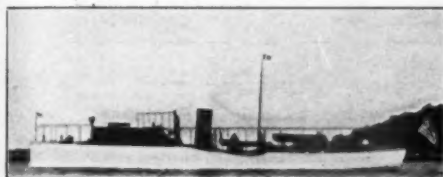
8344—Very fine Steel Ocean-going Cruiser. 275 ft. long. Perfect condition. Low price.



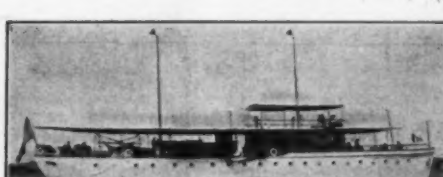
7840—Immediate sale desired of this 155 ft. Twin Screw Steel Steam Fast Cruiser. Speed up to 18 miles. Fine accommodations. Elegant appointments. Attractive price.



5233—Excellent chance to purchase 113 ft. First Class Steam Yacht. Cost \$60,000. Very economically maintained. Must sell immediately to close Estate.



8378—For Sale—113 ft. Twin Screw Lawley Cruiser. 5 staterooms. Speed up to 14 knots. After deck house added 1916.



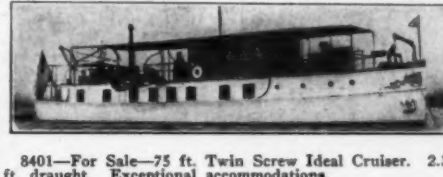
8397—Twin Screw Shoal Draught Coast Cruiser. Exceptional accommodations. All modern conveniences.



8389—For Sale immediately this 100 ft. Steel Twin Screw Cruiser. Speed 14 miles.



7978—For Winter Charter—77 ft. Twin Screw Shoal Draught Cruiser. Very able sea boat.



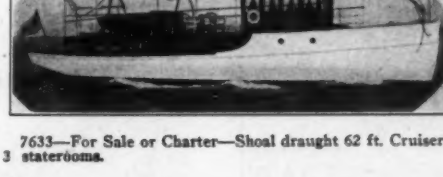
8401—For Sale—75 ft. Twin Screw Ideal Cruiser. 2.3 ft. draught. Exceptional accommodations.



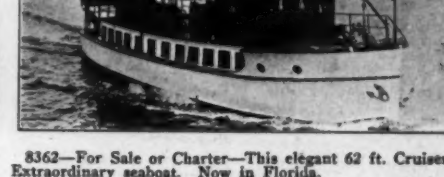
8390—69 ft. Twin Screw Seagoing Cruiser. Crew 3. Attractive price.



8402—65 ft. Coast Cruiser. Practically new. Low price.



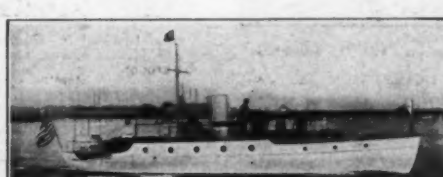
7633—For Sale or Charter—Shoal draught 62 ft. Cruiser. 3 staterooms.



8362—For Sale or Charter—This elegant 62 ft. Cruiser. Extraordinary seaboat. Now in Florida.



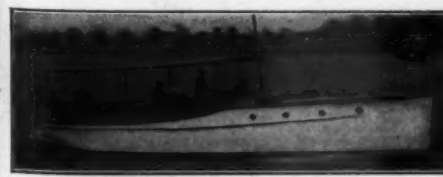
8063—For Sale—The best 60-foot Shoal Draught Cruiser. Practically new.



8133—55-foot Coast Cruiser. Fine accommodations. Very able seaboat. Low price.



8395—55-foot Seagoing Cruiser. New Sterling motor 1916. Speed 12 miles. Low price.



8376—45-foot de Luxe Cruiser. Best boat of type available.



8244—43-foot Florida Cruiser. Low price.



8369—42-foot Coast Cruiser. Exceptionally high grade boat. Low price.

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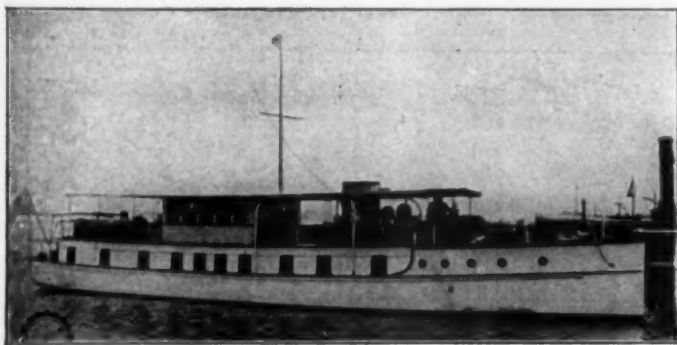
TAMS, LEMOINE & CRANE

Telephone
4510 John

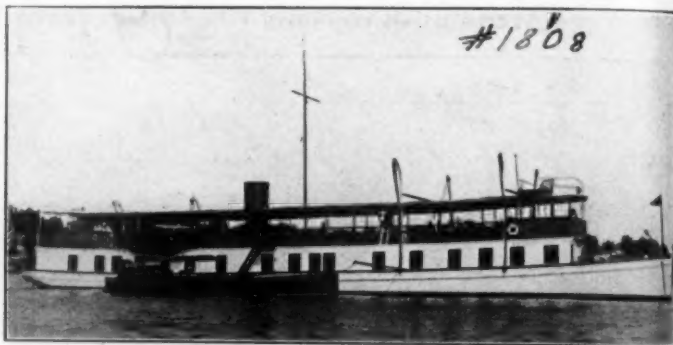
NAVAL ARCHITECTS
AND
YACHT BROKERS

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New York City

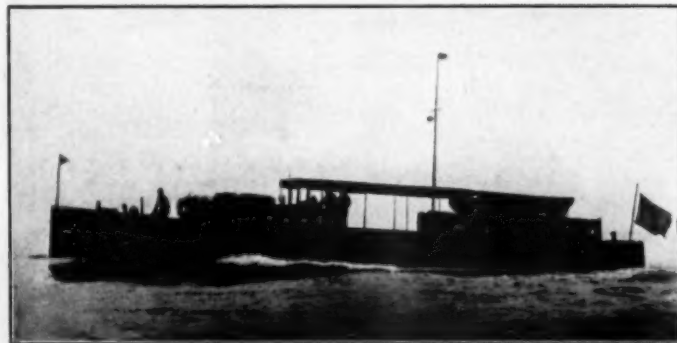
Offer for sale or charter the following yachts, all being ideally suited for Florida waters. We have specialized in Southern charters and can offer the available yachts adapted for Southern cruising.



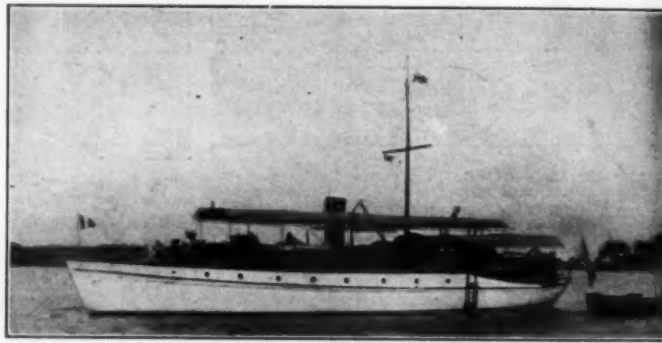
No. 1871—Sale—Charter—Modern motor houseboat. 95 ft. x 19 ft. x 3.3 draft. 4 staterooms, dining saloon, social hall, etc.



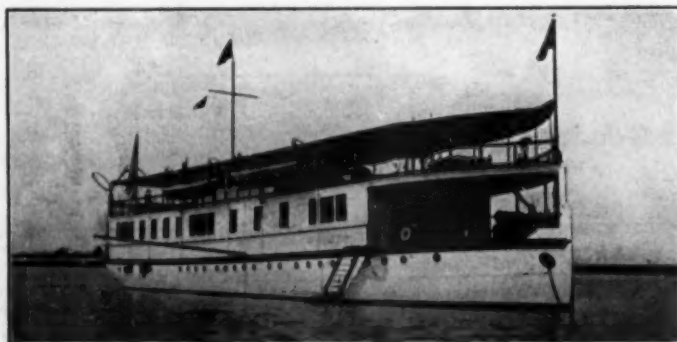
No. 1808—Sale—Charter—Twin Screw Houseboat, admirably suited for Southern waters, 125 ft. x 17 ft. 8 in. x 3 ft. 4 in. draft. 4 Large staterooms, 2 bathrooms, saloon, etc.



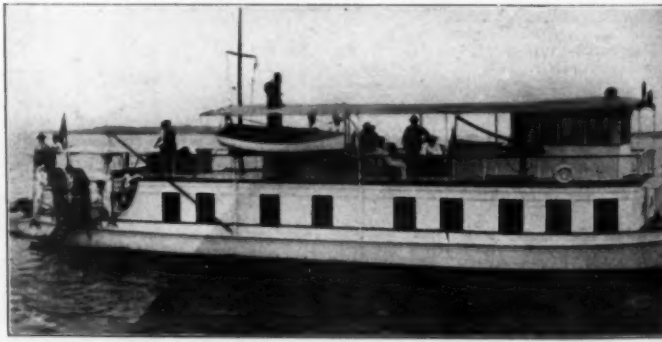
No. 7099—For Sale—Most desirable twin screw day cruiser available, 67 ft. 10 in. x 12 ft. x 3 ft. 9 in. draft. Designed by us; built 1911. Two 20th Century motors. Speed up to 14 miles. Very large cockpit.



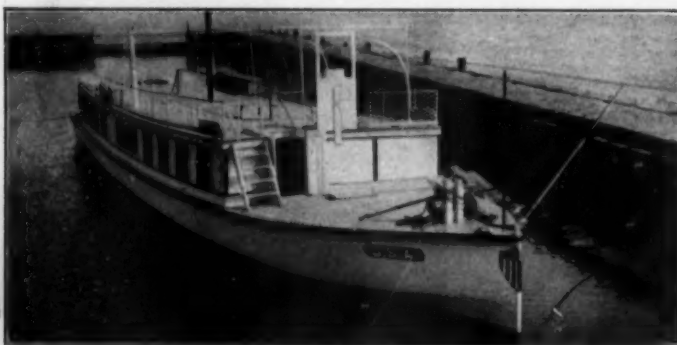
No. 7674—Sale—Charter—Modern twin screw motor yacht 75 ft. x 17 ft. 6 in. x 3 ft. 8 in. draft—20th Century motors. Speed, 12 miles. One double and one single stateroom and very large main saloon.



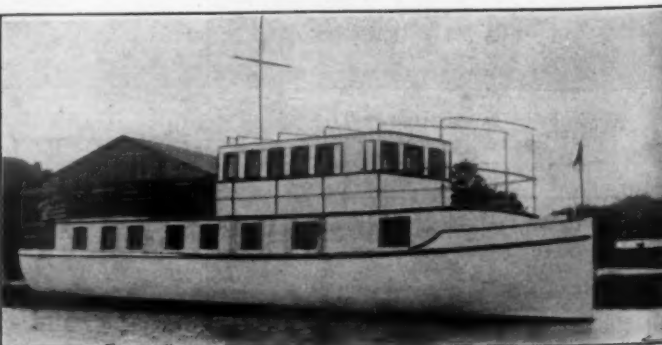
No. 1805—Available for Winter Charter—Modern twin screw, 125 ft. houseboat. 8 Large staterooms, 3 bathrooms, and 3 saloons.



No. 1860—Sale—Charter—Desirable Houseboat, 70 ft. x 18 ft. 6 in. x 18 in. draft. 2 35 H.P. Sterling motors new 1913. 3 double staterooms, saloon, deckhouse and bathroom.



No. 1847—Sale—Charter—Shallow draft houseboat, 85 ft. x 18 ft. x 28 in. 4 staterooms, large main saloon and bathroom.



No. 1912—Charter—Modern Houseboat, 64 ft. x 17 ft. 6 in. x 3 ft. 2 in. draft. 3 staterooms, main saloon, sitting room on deck, bathroom, etc. Standard motor.

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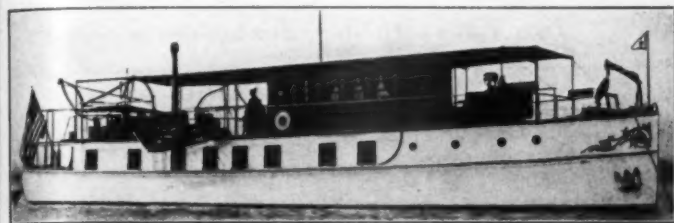
GIELOW & ORR

52 Broadway, New York

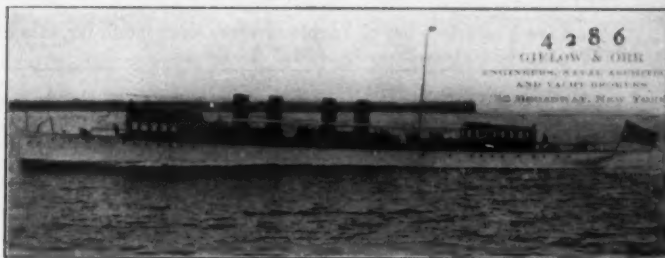
Telephone, 4673 Broad.

Cable Address:
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A. B. C. Code

We can offer any yacht available for purchase or charter



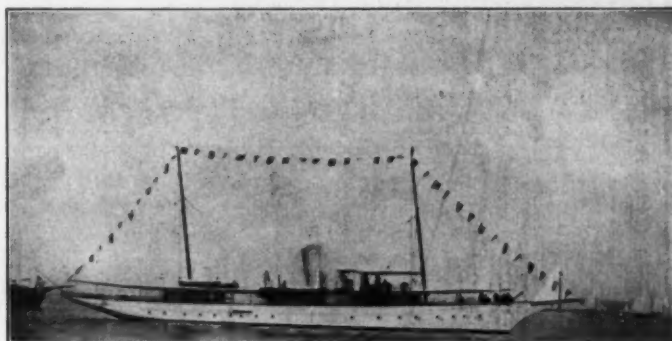
No. 5559—For Sale—Practically new, 75-foot twin screw house boat. Four staterooms, bath, large saloon and music room. Well adapted for southern cruising.



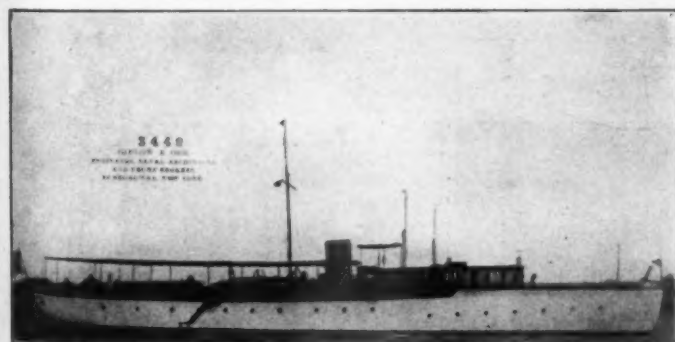
No. 4286—One of the greatest bargains ever offered, 166 ft. twin screw, turbine steam yacht. Burns fuel oil. Speed up to 30 miles. While especially adapted for fast ferry service has good cruising accommodations.



No. 5532—Sale or Charter—62 ft. over all, 3 ft. 6 inches draft. Two double staterooms, bath, deck and dining saloons. Practically new. Located in Florida.



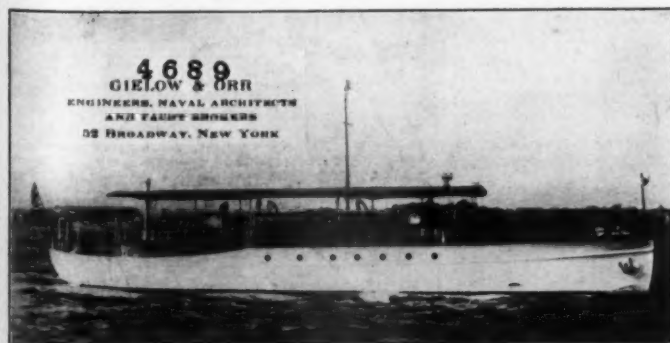
No. 1750—Bargain—Twin Screw Steel Steam Yacht, 155 x 18 x 8 ft. Speed up to 16 miles. Three double, two single, staterooms, two baths. Well kept up.



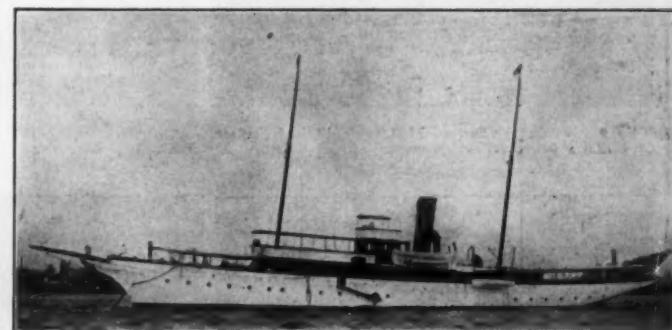
No. 3442—Sale or Charter—Twin screw steel motor yacht. Speed up to 16 miles. Large deck dining saloon, three double staterooms, two bathrooms. Completely equipped.



No. 4267—Smart and able cruiser, 71 x 12 x 3 ft. 6 inches. Two staterooms, bath, main and dining saloons. Large cruising radius.



No. 4689—Sale or Charter—Twin screw motor yacht, 77 x 12 x 3 ft. 6 inches draft. Exceptionally fine cruiser with commodious and handsomely appointed accommodations. Built for Florida cruising.



No. 5—Sale or Charter—175-foot steam yacht. Large accommodations; completely and handsomely furnished.

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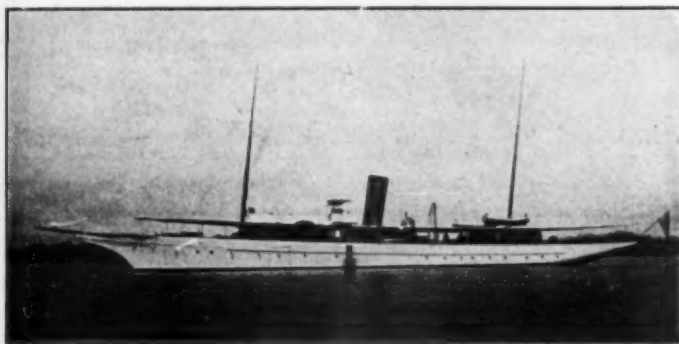
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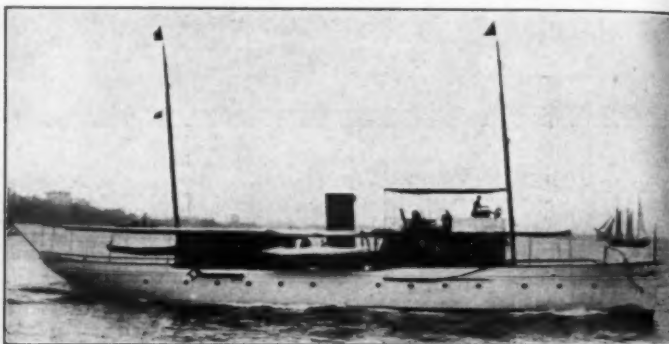
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Yachting, N. Y.

We have a complete list of Yachts of every description for sale and charter.

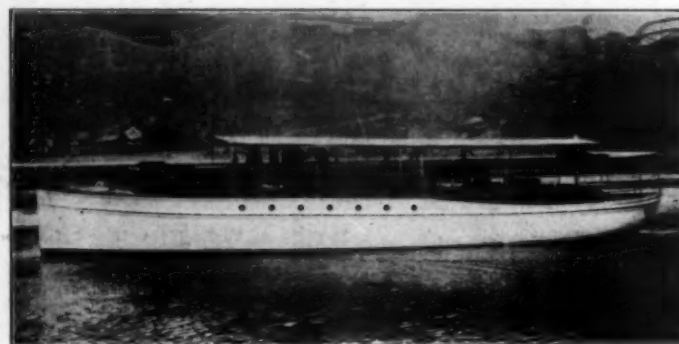
Plans, Photos and full particulars furnished on request



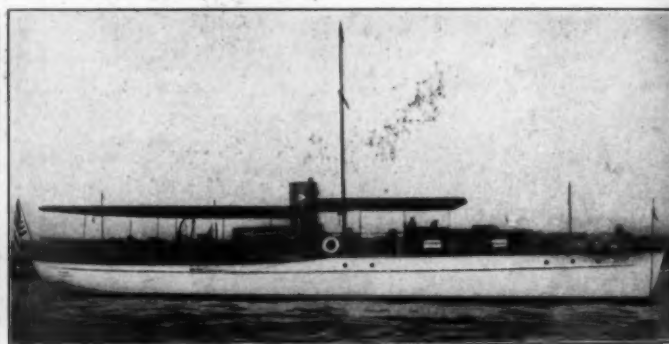
No. 181—Steel Steam Yacht, twin screw, 155 x 18, Seabury built; good accommodations, speed 16-18 miles. In commission.



No. 1549—Steel Power Yacht, 98 x 16, two Standard motors, 125 H.P. each. Exceptionally good accommodation.



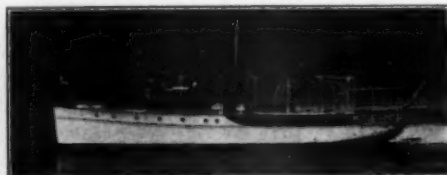
No. 2179—Twin Screw Cruiser, 84 x 16.6, light draft, built 1916, two first-class motors, A-1 proposition.



No. 1950—High class cruiser, 75 x 14.6, six-cylinder Sterling, everything in splendid shape.



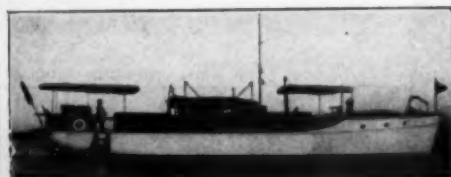
No. 2136—Modern cruiser, recent build, 65 in. x 14 ft. Six-cylinder motor; attractive interior layout.



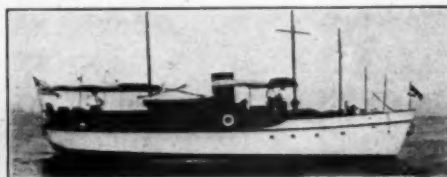
No. 1927—Ideal cruiser, recent build, 65 x 13 x 3.6, six-cylinder Twentieth Century motor, first-class condition.



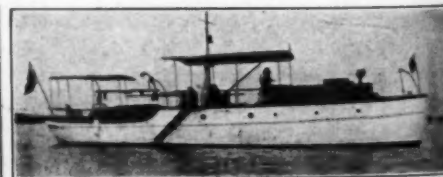
No. 64-H—Florida Houseboat, 62 x 17, light draft, tunnel stern, 50 H.P. motor, large accommodations.



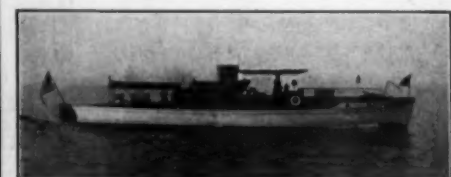
No. 2072—Winter Charter—Florida—Light draft cruiser, 60 x 12.6 x 3.6, excellent quarters.



No. 1869—Bridge Deck Cruiser, 56 x 12 ft., light draft, 4-cylinder engine, speed 11 miles. Actively in market.



No. 1956—Desirable cruiser, 53 x 11.6. Twentieth Century motor, everything in good condition. Price reasonable.



No. 1625—Twin Screw 60 ft. motor boat, two new six-cylinder Sterlings; speed 15 miles.



No. 1779—Raised deck cruiser, 56 ft. x 13.2 ft. x 3 ft. 20th Century motor. Bottom coppered for Southern use. Price reasonable.



No. 2059—Comfortable cruiser, 51 x 10.2, built 1913. Speedway motor.

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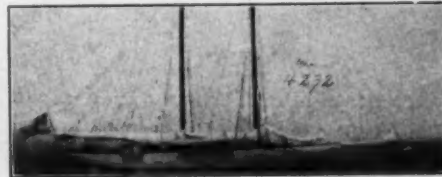
Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. If none of these appeal to you, write us your requirements. Our knowledge of the yachts we offer, and our 22 years' experience in the business, insure satisfaction to any one buying or chartering a yacht through this office.



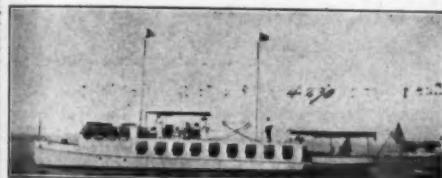
No. 1345—55-foot cruiser. Double stateroom, saloon, bath, etc. Speed 12 miles.



No. 1774—35-foot cruiser. Practically new. Two extension berths in cabin. Electric light, etc. Speed 12 miles.



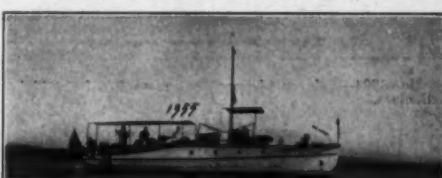
No. 4232—105-foot auxiliary keel schooner, practically new. Four staterooms, large saloon, etc. Owned by an Estate.



No. 4230—80-foot Power Houseboat. Two staterooms, saloon, etc.



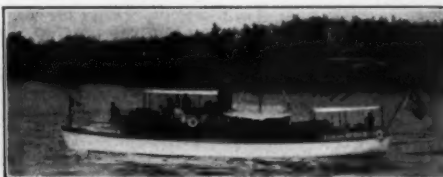
No. 2686—250-foot Ocean-Going Steam Yacht. Ten large staterooms, saloons, four baths, etc. Speed up to 14 knots. Price attractive.



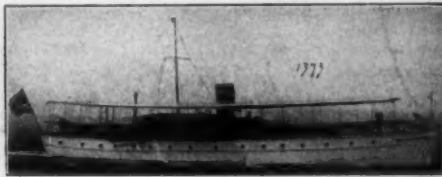
No. 1355—45-foot cruiser. Double stateroom and saloon, sleep six. Speed 11 miles.



No. 4196—Sale or Charter—60-foot auxiliary shoal draft schooner. Three staterooms, two saloons. Three toilets. Electric light, etc. An ideal yacht for Florida waters.



No. 1253—65-foot cruiser. Double stateroom, main saloon and pilot house, sleep six. Speed 11 miles. Bargain.



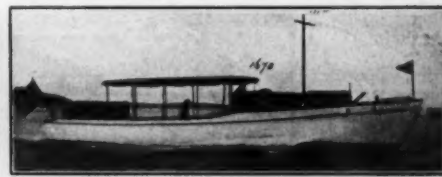
No. 1373—90-foot twin screw power yacht. Three staterooms, two saloons, bath, etc. Speed 13 miles. Splendid houseboat. Price attractive.



No. 1059—112-foot twin screw power yacht. Five staterooms, two saloons, bath, etc.



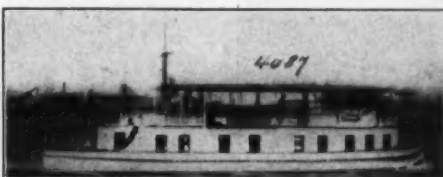
No. 1177—80-foot power yacht. Four staterooms, saloon, bath, etc. Speed 13-15 miles. Price attractive.



No. 1670—45-foot cruiser. Stateroom and main cabin with two Pullman berths. Speed up to 15 knots.



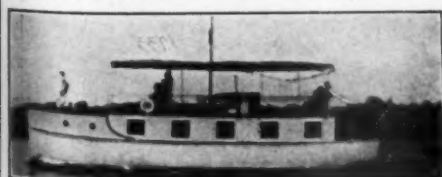
No. 3932—65-foot power houseboat. Four staterooms, saloon, bath, etc. Speed 8 miles.



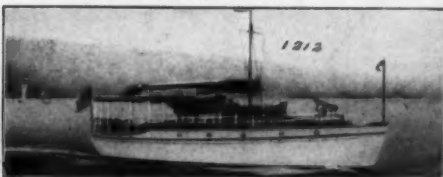
No. 4087—70-foot twin screw power houseboat. Three staterooms, large saloon, bath, etc. Speed 10 miles.



No. 4231—Sale or Charter—65-foot shoal draft power houseboat. Four staterooms, large saloon, bath, etc. Now in Florida.



No. 1733—43-foot cruiser. Double stateroom. Saloon with four berths. Speed 9-10 miles.



No. 1212—60-foot cruiser. Two staterooms and saloon, sleep 6 or 7, bath, etc. Speed 11 miles.



No. 1708—55-foot semi-houseboat and cruiser. Three staterooms, large main saloon, bath, etc. Ideal for Southern cruising.

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Cable Address "Windward," N. Y. 29 Broadway, New York

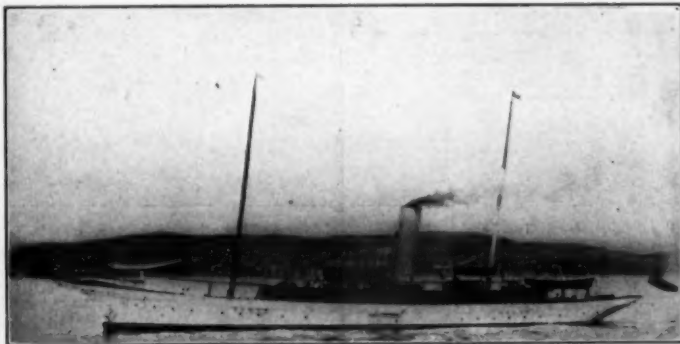
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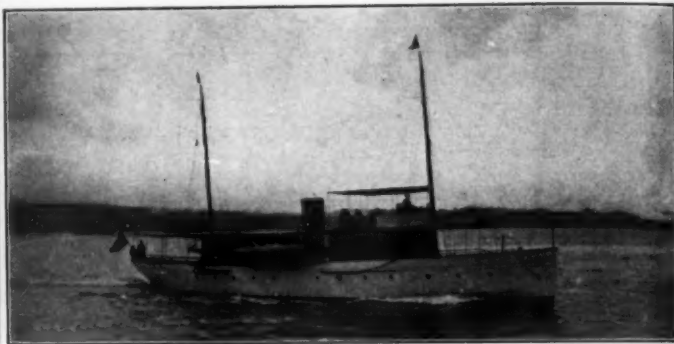
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Description, Prices on Request

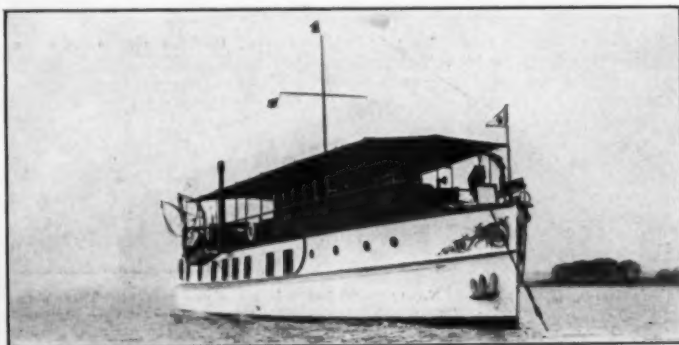
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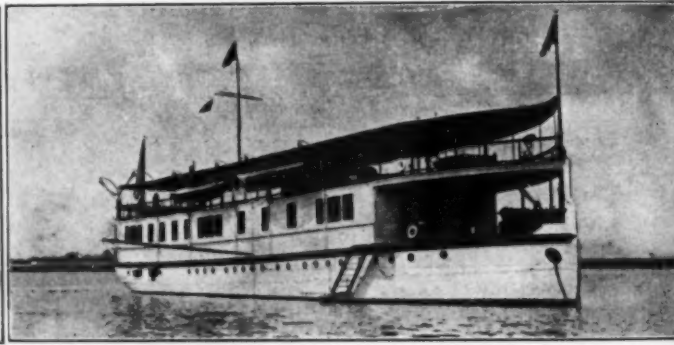
No. 3904—Sale or Charter—Steam yacht of the highest grade. Apply for further particulars.



No. 5952—Exceptionally fine power yacht, 99 x 16 x 5; Standard engines.



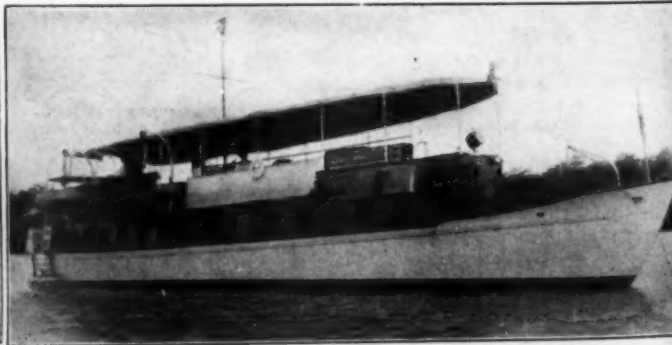
No. 3039—Sale or Charter—125 ft. power house yacht; handsomely furnished; light draft.



No. 6913—75 ft. power house yacht; twin screw; luxurious accommodations and light draft.



No. 4172—80 x 14 power yacht; light draft; owner anxious to sell, consider reasonable figure.



No. 6030—70 ft. gasoline cruiser; house boat type; desirable for Southern cruising; speed 12-13 miles.



No. 708—Gasoline house boat, 43 x 13; exceptionally fine equipped; recently built; now has glass wind shield.



No. 873—53 ft. gasoline cruiser; commodious accommodations; desirable for Southern cruising.



No. 3053—40 ft. express cruiser; built 1916; speed 25 miles per hour; wonderful sea boat.

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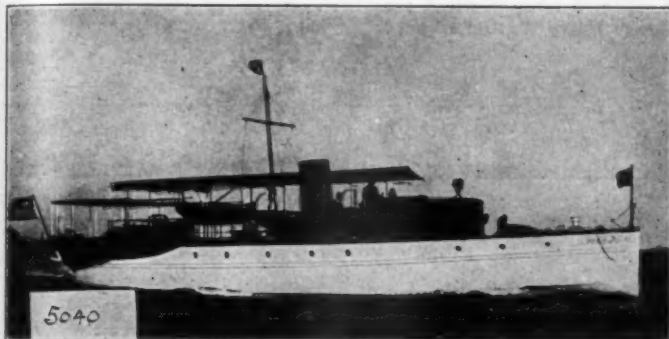
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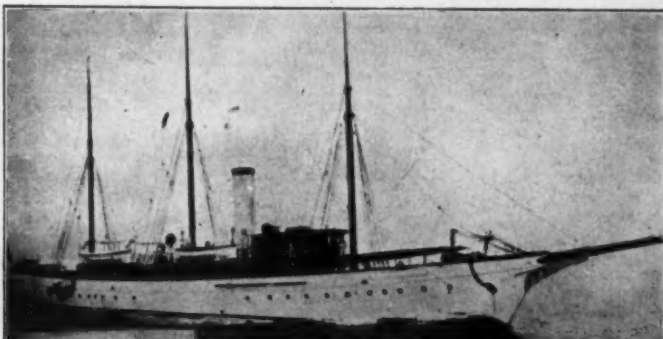
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42 BROADWAY

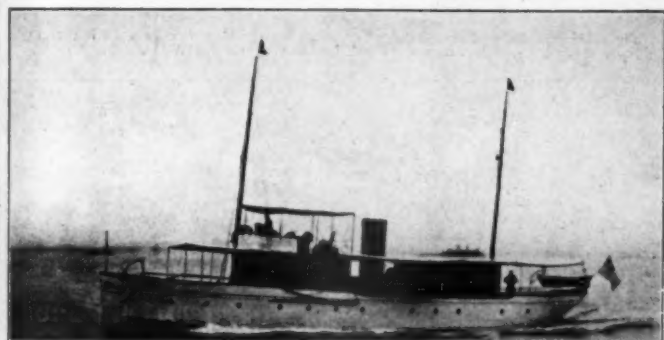
NEW YORK



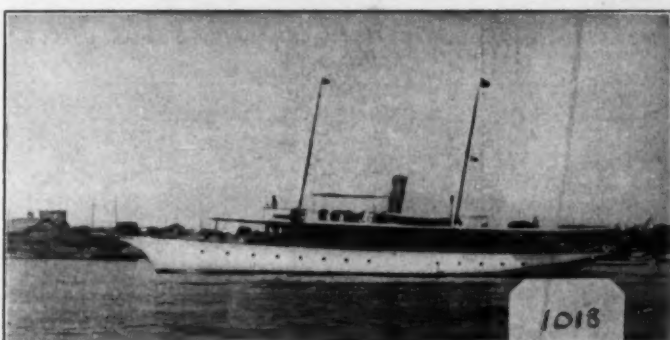
No. 5054—For Sale—High-class 71-foot twin screw cruising motor yacht. Excellent accommodations. Completely and handsomely furnished. Speed 13 miles.



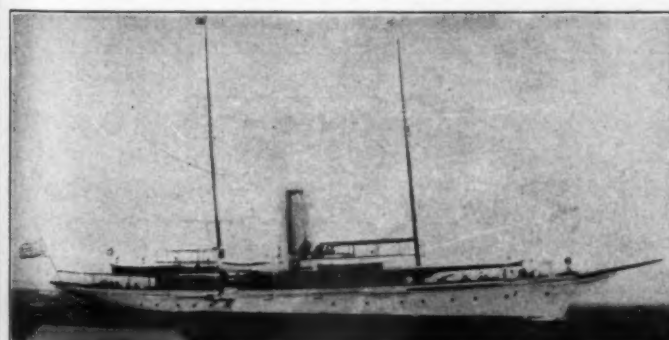
No. 1008—For Sale—Seagoing 245-foot steel steam yacht, with all conveniences for offshore cruising. Particularly fine seaboat. Will be sold at reasonable figure.



No. 5056—For Sale—Best 98-foot twin screw, flush deck, steel motor yacht available. Unusual accommodations. Fine condition throughout. Subject closest inspection. Fully found.



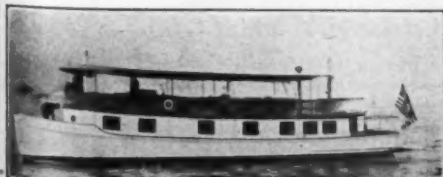
No. 1018—For Sale to close an Estate—Roomiest and most economical 112 ft. cruising steam yacht afloat. High class throughout. Low price.



No. 1101—For Sale or Charter—165-foot seagoing steam yacht. Sleep 11 in owner's party. Condition A-1 throughout.



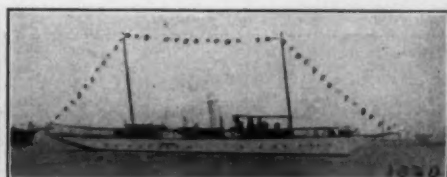
No. 3015—For Sale—110-foot twin screw houseboat, recent construction, heavily built. Unusual accommodations. Ideal for Southern cruising. Fine condition throughout.



No. 3006—For Sale—Modern houseboat, 60 ft x 17 ft. 2 in. x 3 ft. draught. Sterling engine, 3 staterooms. Large saloon. Finely finished and furnished. One-man control. Best boat of size available.



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No. 1020—For Sale—Attractive price—High-class 160-foot fast cruising steel steam yacht. Excellent accommodations. Perfect condition throughout.

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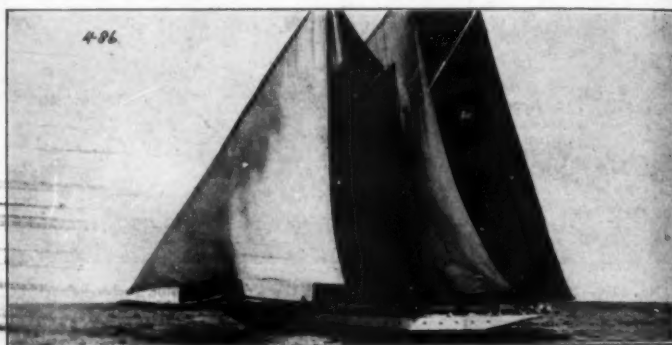
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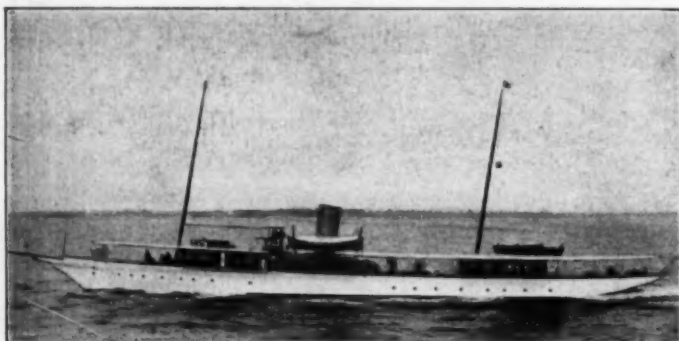
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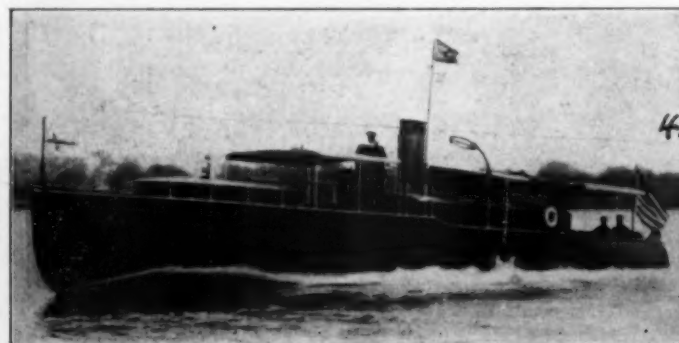
No. 486—For Sale—Exceptionally fine schooner yacht, 127 x 24 x 14 ft.; 4 single, 2 double staterooms, 3 bathrooms. Condition and equipment A-1.



No. 110—For Sale—Handsome, fast, 177 ft. steam yacht. Speed up to 21 miles. 5 staterooms, 4 baths.



No. 190—For Sale—Modern gasoline houseboat, 68 x 21 x 2.6 ft. Luxuriously furnished. Two staterooms; sleeping accommodations for 7 persons.



No. 482—For Sale—Express cruiser, 65 ft. Speed 26 miles. Sleeps 6 persons besides the crew. Handsome boat; must be seen to be appreciated.



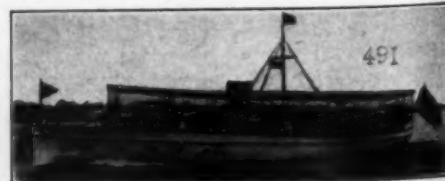
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No. 414—For Sale—High class 36 ft. runabout. Speed 15-16 miles. Exceptionally well built.



No. 491—For Sale—Largest 65-footer afloat; practically new. Sleeps 10 persons. Excellent condition.

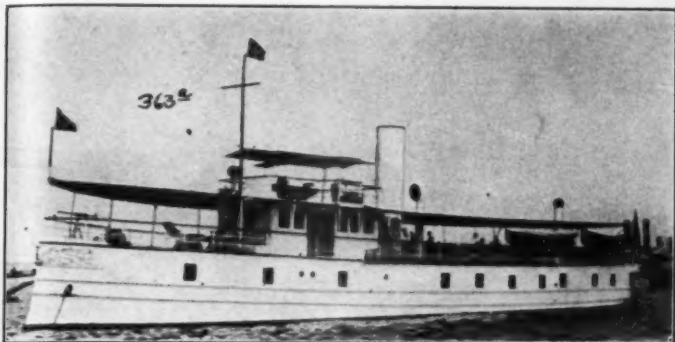
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Naval Architects
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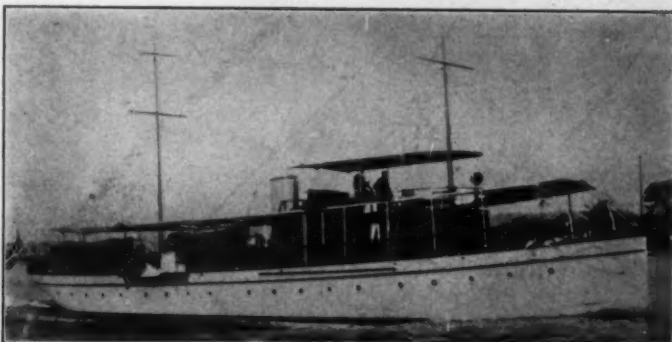
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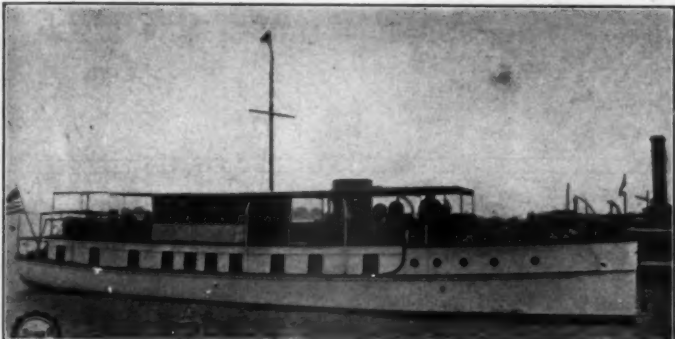
We offer the following Craft which are especially adapted for service in Florida waters. Please advise us of your requirements for this Winter, whether to purchase or charter, and we will gladly submit data regarding suitable boats.



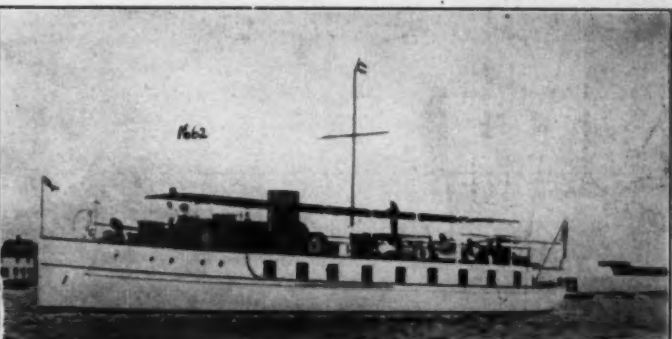
No. 363—For Sale or Charter—Most attractive houseboat of large size; luxuriously furnished; all conveniences; must be seen to be appreciated. Cox & Stevens, 15 William St., New York.



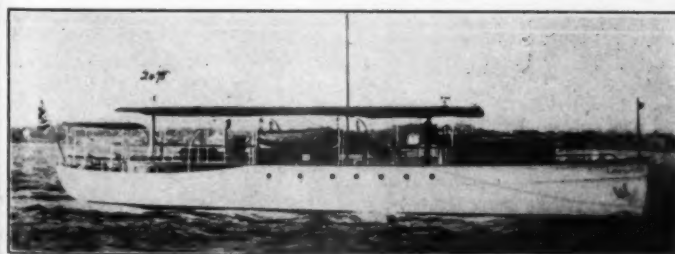
No. 1796—For Sale or Charter—Very roomy, twin screw cruising power yacht, 99 x 17 x 4 ft. Speed 13-15 miles. Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William St., New York.



No. 2100—For Charter—Especially desirable, twin screw gasoline houseboat; 95 x 19.3 x 3.3 ft. Speed 12-13 miles. Large social hall on deck, main saloon, four double staterooms, bath, two toilets, etc. Handsomely finished and furnished. Cox & Stevens, 15 William St., New York.



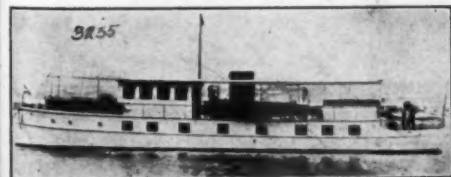
No. 1662—Modern gasoline houseboat, 90 x 17 x 3.5 ft. Speed 10 to 12 miles. Large dining saloon, smoking room, four staterooms, two bathrooms; all conveniences. Best craft of type available. Cox & Stevens, 15 William St., New York.



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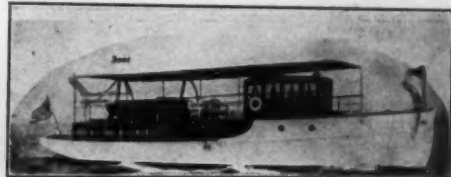
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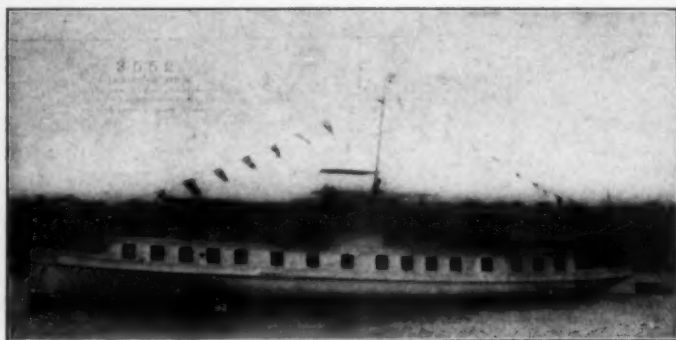
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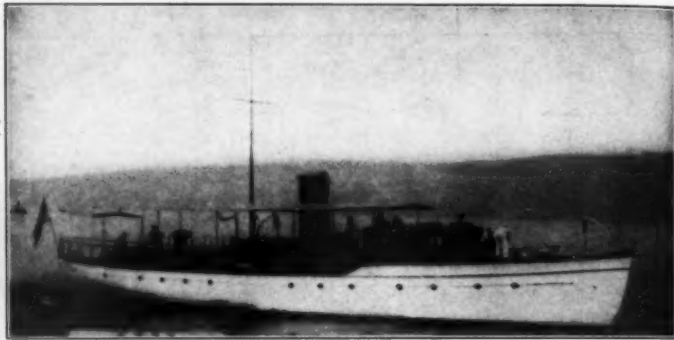
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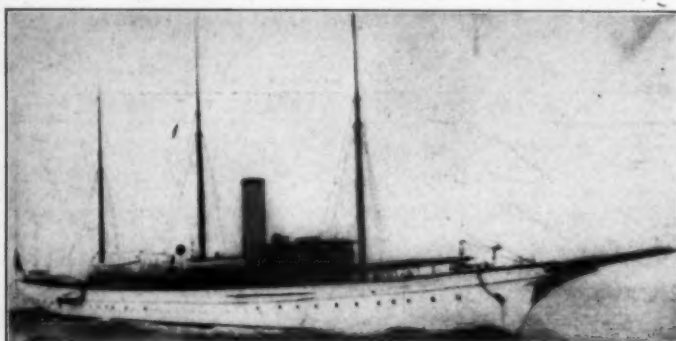
We can offer any yacht available for purchase or charter



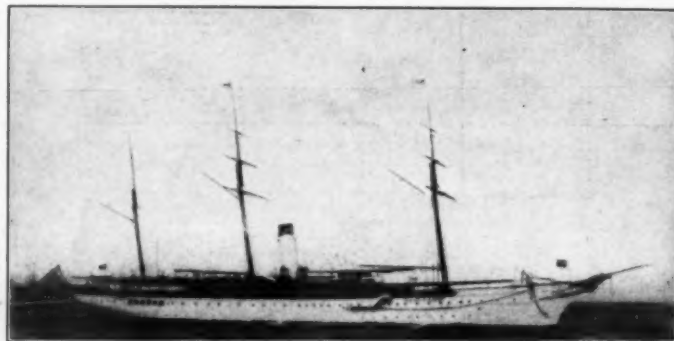
No. 3552—Sale or Charter—110-foot x 20-foot, twin screw power houseboat. Four double staterooms. Main cabin and pilot house.



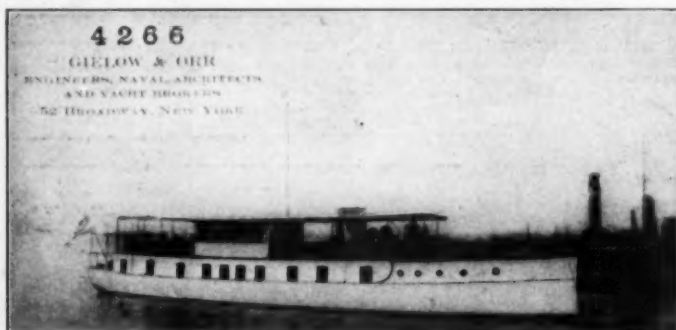
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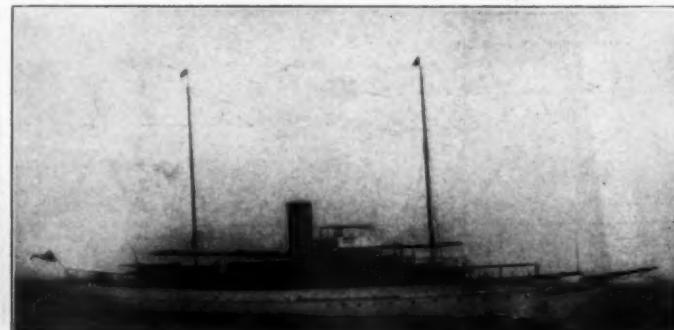
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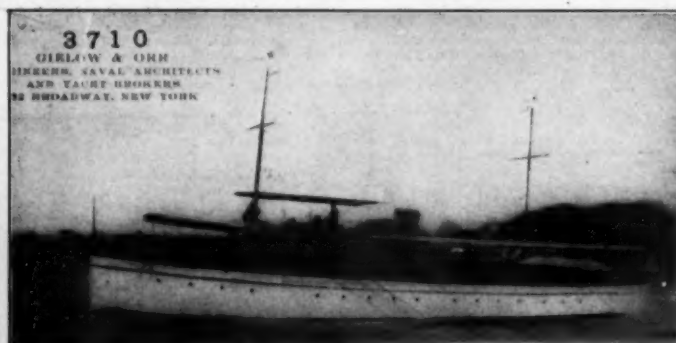
No. 3221—Sale or Charter—280-foot steam yacht. Twelve staterooms, nine baths. Has cruised extensively in foreign waters.



No. 4266—Sale or Charter—Desirable 95-foot twin screw power houseboat. Four double staterooms. Deck saloon and main cabin.



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No. 1850—Sale or Charter—98-foot auxiliary schooner. Three staterooms, bath. Excellent sea boat.

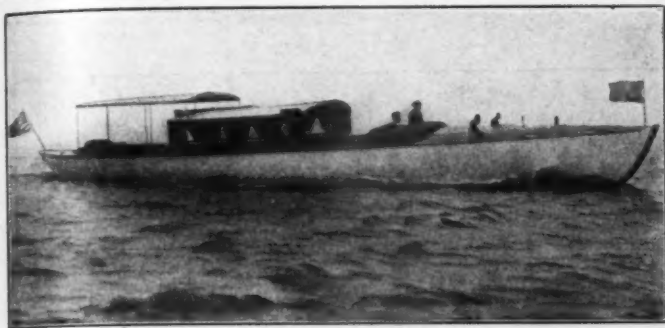
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THE MoToR BOATING MARKET PLACE

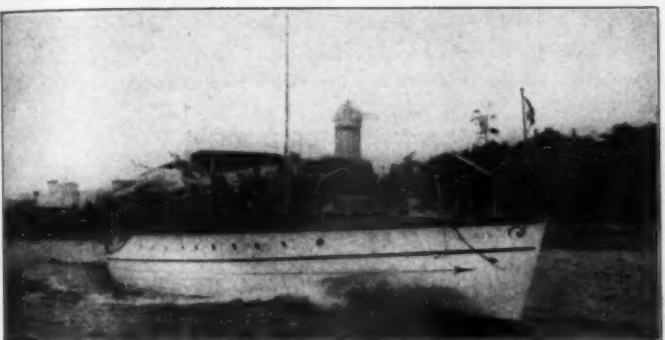
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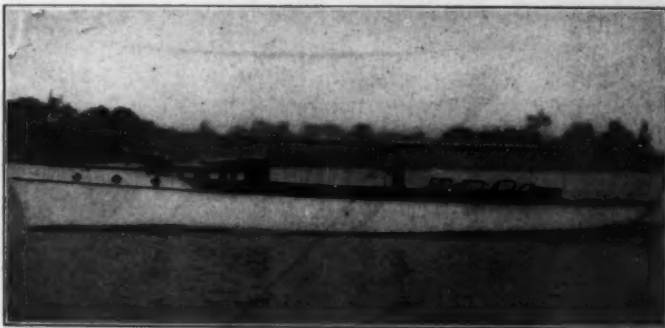
Elco de Luxe day cruiser, 54 x 9 x 2 ft. 8 in. Standard motor. McIntosh Agency, 32 Broadway, New York City.



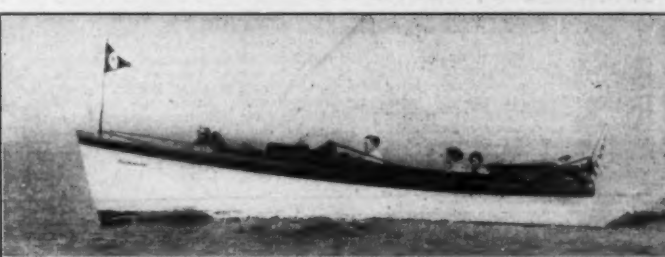
Motor Yacht Osprey II, 80 x 14 x 4, two Standard motors. McIntosh Agency, 32 Broadway, New York City.



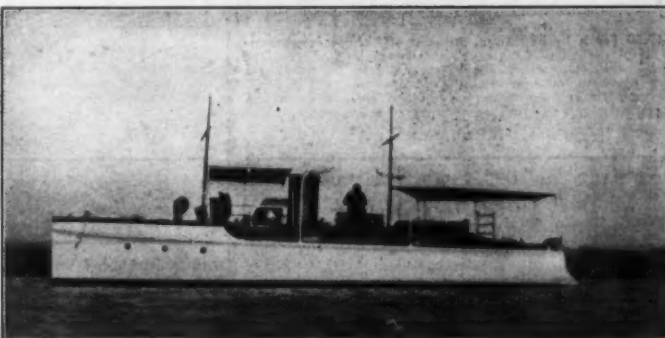
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One 75 H.P. Standard Marine engine, 4-cylinder, 9 in. bore and 12 in. stroke with complete equipment; bargain. 402 Bristol Bldg., New York City.

WANTED:—45 to 55-foot cabin cruiser at close of season. Cheap enough for altering interior for new family needs. "Cruiser," 1618 Tea St., Washington, D. C.

FOR SALE—Unusually complete thirty-eight-foot cruiser with toilet, galley, refrigerator, electric lights, wicker chairs, new tender, and full equipment. All in excellent condition. Box 26, 27 West 44th Street, New York City.

FOR SALE—Murray & Tregurtha 4-cylinder 5 x 6, 24 H.P. engine complete, practically new, double Bosch ignition. Detroit oiler, governor air and bilge pumps, reverse, cost \$1600, will sell \$700. E. J. Schworm, 15½ Mt. Vernon St., Dorchester, Mass.

FOR SALE—One 18 ft. cedar speed boat and one 2-cyl. 12 H.P. Gray motor in good shape. Write for particulars. U. J. McCann, St. James, Mich.

50-foot Cruiser, raised deck, for sale or trade; in commission; very reliable. Heavy duty engine. Tindall, 1761 Broadway, New York City.

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An Elastic, Everlasting, Boat Leak Compound, **STICK-TITE**. Applied cold with putty knife. Saves caulking. Two pounds mailed \$1.00. Five pounds \$2.00. Insulaine Co., Inc., One Broadway, New York.

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WANTED—A 40 to 60 ft. motor boat adapted to cruising in Florida waters. Will exchange my automobile, six-cylinder Chandler; self-starter, sedan body, made to order at \$1700 expense. Can be used as a sleeping car. Has been run less than 4000 miles and always by owner himself. Made for special trip; now have no further use for it. Guaranteed to be as good as new. Send description of boat to Box 46, Back Bay Station, Boston, Mass.

40 H.P. National auto engine, Bosch magneto, and transmission, \$80. Others cheap. Elmer Calkins, Petoskey, Mich.

FOR SALE—Extraordinary Bargain, \$2500, 67 x 12 x 3.9 Cruiser. Exceptionally well built. 60 h.p. Automatic engine. Excellent condition, one man control. Electric light. 3 staterooms, 3 toilets, large salon, large pilot house, sleeping 6 to 10. 2 tenders. Fully found. Especially adapted Southern cruising. Box 118, New York Athletic Club, New York City.



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Trimount Whistle Blower, Outfits	Trimount Rotary Hand Edge Pumps
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.	All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
3 sizes, \$10, \$15, \$20.	3 sizes, \$20, \$25, \$35.

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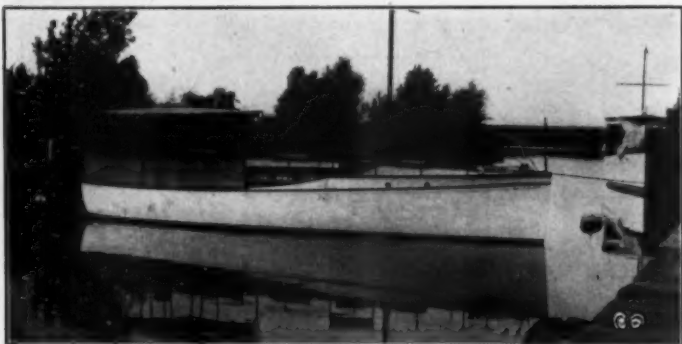
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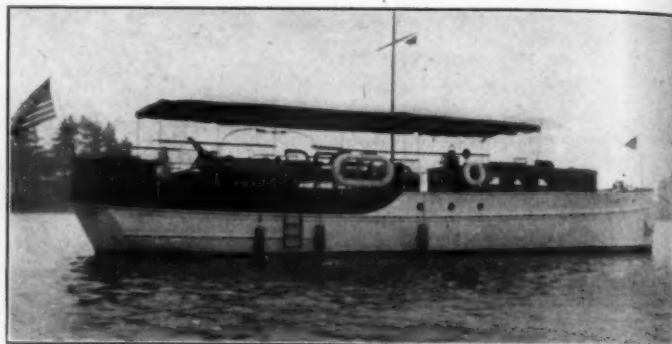
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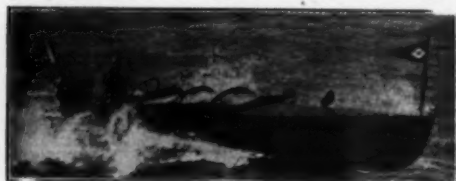


FOR SALE—Cruising motor yacht, 43 ft. x 10 ft. x 3 ft. Speed, eleven miles. Designed by Bows & Mower on lines similar to Bermuda racer "Dream." Fine long-distance cruiser, very able rough-weather boat and fully equipped for trip down the Mississippi River to Florida waters. Oak frames, cedar planking, copper and bronze fastened; mahogany deckhouse and trim. Cabins finished in white enamel and mahogany; 6 ft. 6 in. headroom; stateroom forward, companionway, toilet, lavatory, full-length clothes lockers, running water, electric lights from Edison Storage Battery. Two 18 H.P. Lathrop engines, fitted with Bosch magnetos and Lunkenheimer multiple oilers. Two copper fuel tanks set in two copper pans and 80-gal. water tank. Very complete equipment including anchors, chain cable, Manila cable, side and towing lines, binnacle and wheel in one standard, Lawley patent skylights, Herreshoff patent capstan, air mattress, carpets, double oil stove, large Eddy ice chest, dishes and cooking utensils. Everything of the best—boat has had best of care and is in perfect condition.

Full particulars, plans, and photographs may be had from
THE MATTHEWS BOAT COMPANY, Port Clinton, Ohio.

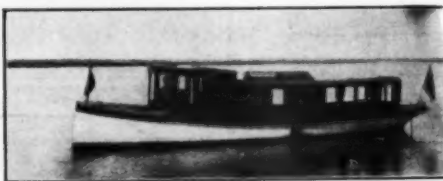


FOR SALE—55 ft. cruising houseboat, beam 12 ft. 6 in., draft 3 ft. Suitable for Florida use. Can be seen in New York City. Ludus Marine Construction Company, Stamford, Conn.



\$47.50 for a limited time, we will sell these seventeen-foot stepless hydroplanes at the above price for complete knock-down boat, which includes mahogany interior and every piece of material necessary to complete the hull. Other models at proportionate prices. Write for circulars.

HYDROPLANE CONSTRUCTION COMPANY
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 Cochran & Grannan, Atlantic City, N. J.



No. 138—Buyer's opportunity to purchase high grade power cruiser, 35 ft. long, 7 ft. 8 in. beam, handsomely constructed of cedar and mahogany, stateroom and two extension berths in cabin, toilet, four cycle Buffalo motor in separate engine room, electric lights, cedar tender. Splendid sea boat, lavishly furnished and a real bargain, \$900. Offers solicited. Boston Yacht Agency, 15 School Street, Boston, Mass.

FOR SALE—Day Cruiser built 1915. Designed by Hacker. Speed 15-18 miles hour after hour. Splendid sea boat. Toilet, water, electric lights. Equipment especially complete. Engine 60 H.P. 6-cyl. Loew-Victor, new with boat. This is a high-class V-bottom outfit. C. C. Co., 168 West High Street, Carlisle, Pa.

FLORIDA

36-foot Elco Express Runabout—Fully Equipped. Speed twenty-two miles per hour.

35-foot Bridge Deck Cruiser—Fully Equipped and in commission. Speed nine miles per hour.

40-foot Bridge Deck Cruiser—Fully Equipped and in commission. Electric Starter and power windlass. Speed ten miles per hour.

These boats are all less than two years old and guaranteed in the best of condition. Cruisers were built for Florida waters. National Boat & Engine Co., of Florida
 Foot Main Street, Jacksonville, Florida.

WANTED—In commission near New York—A good cruiser between 40 and 45 ft. long, in first-class condition, one man control and a bargain in price. Address Captain, No. 3 River St., Cooperstown, New York.

Runabout of exceptional merit. This beautiful V-bottom motor boat is especially designed for those who desire a snappy craft of seaworthiness and speed. She makes 20-22 miles. Is lavishly equipped. Powered with 50 H.P. 4 cyl. Sterling motor new 1916. C. C. Co., 168 West High St., Carlisle, Pa.

WANTED—A position as engineer on a family cruiser going South this fall. John Baker, Mayville, N. Y.

FOR SALE—25-foot Cabin Cruiser, extra roomy, toilet, sink, 2-cylinder Putnam motor. Sold on account of owner's death. Bargain at \$275.00. S. G. Putnam, 18 Fox St., West Springfield, Mass.

FOR WINTER CHARTER

from November 1st, 1916 to April 17th, 1917, the beautiful 60 ft. x 13 ft. Cruiser "Audwin," draft 3 ft. 6 in. The "Audwin" is particularly adapted for Southern waters on account of her perfect ventilation and light draft. Speed about 12 miles per hour. 4-cylinder 6½ x 8½ 20th Century motor. Very economical. Cruiser designed and built by New York Yacht, Launch & Engine Co. Splendid accommodations, consisting of owner's stateroom, very spacious; dressing room, toilet and lavatory, conveniently located; especially large salon, large galley and ice box (which holds about 900 lbs. of ice), bridge deck—very spacious with one man control. Engine room and crew's quarters forward, and entirely separate from owner and guests. Sleeping accommodations for seven, and pipe berths for crew of three forward.

This yacht is without a doubt one of the most comfortable and reliable ever built. For further particulars address M. C. Kimball, care Bruns Kimball & Co., 115 Liberty St., New York City.

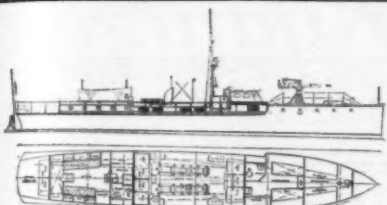
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offer.

A Double Fuel System

(Continued from page 26)

pipe size. The outfit measures about 8 inches long by about 4 inches wide, with the long dimension fore and aft, and with a gasoline sieve and single coil of pipe between the carburetor and the valves for accommodating vibration.

The following letters and explanations, therefore, refer to Fig. 1: S. G. L. is stern gasoline line; B. G. L. is bow gasoline line; C. L. is carburetor line; S. G. L. V. is stern gasoline line valve; B. G. L. V. is bow gasoline line valve; A. L. is air line; S. A. L. V. is stern air line valve; B. A. L. V. is bow air line valve.

A moment's study will show that when the engine is running on the bow tank all valves are closed except B. G. L. V.; and that when it is working from the stern tank all valves are closed except S. G. L. V. It is, furthermore, clear that when the air tank is in service of the whistle only, both S. A. L. V. and B. A. L. V. remain closed. Entire independence of the air line from the gasoline line is thus secured and yet it is possible to clean out either the stern gasoline line or the bow gasoline line by the proper manipulation of the valves.

When it is desired to clean the bow gasoline line, the engine runs on the stern gasoline line by opening the stern gasoline line valve S. G. L. V., and its running is protected by closing the bow gasoline valve B. G. The hand hole cover of the bow gasoline tank is now removed which is a caution never to be omitted in order to avoid spreading the seams of the tank. The bow air line valve B. A. L. V. is now cautiously opened until the line is thoroughly blown out and then closed. It is well to clean the lines when the gasoline tanks are nearly empty, as otherwise the high air pressure will blow much of it out. When it is desired to clean out the stern gasoline tank the process is exactly reversed.

Fig. 2 shows the arrangement available for port and starboard gasoline tanks, whose application will be at once apparent after a little study. As in Fig. 1, the reference letters are: P. G. L. is port gasoline line; S. G. L. is starboard gasoline line; C. L. is carburetor line; A. L. is air line; P. G. L. V. is port gasoline line valve; S. G. L. V. is starboard gasoline line valve; P. A. V. is port air valve and S. A. V. is starboard air valve. No sieve or spring coil is shown in Fig. 2. The same fittings used in the boat of the author for the outfit of Fig. 1 were employed in setting up Fig. 2, so that the device has approximately the same size, 8 by 4 inches.

Anyone using this plan of keeping his gasoline lines clear will be more than pleased at its simplicity and efficiency.

AIR PRESSURE, N. Y. C.

The Largest Gasoline Motor Ship

(Continued from page 30)

of being placed V-shape, as the modern eight- and twelve-cylinder motors are arranged, and each cylinder casting weighs nearly 2,000 pounds. The bore of the cylinder is large enough to completely conceal a six-foot man within it. The large cylinders are necessary because the engine runs at a normal speed of only 200 r.p.m., whereas the average high-powered motor boat contains an engine that operates at five or even ten times this speed.

In order to obviate the necessity of reversing the machinery or installing reversing gears, the engine was placed in the center of the boat and connected through friction clutches to propellers at either end. As the two propellers are of opposite pitch, the direction of the boat is controlled by engaging either one clutch or the other. The propellers are six feet in diameter.

The three tracks running the entire length of the deck can accommodate a total of twelve passenger coaches. Below decks are located crew's quarters, galley, and a dining room that will seat sixty persons. Ramon's length is 236 feet and her beam 58 feet.

An Ingersoll Wrist Watch

is nowadays reckoned indispensable on a boating trip. Stop in at any dealers and see the fourteen different kinds of Ingersolls. \$3.50 and less.

THE KENNEDY MACHINE CO., manufacturing the "BULL DOG" Reverse Gear, the gear that "never fails to grip," desires to establish agencies all over the country, and anyone interested in handling the best gear on the market today, will communicate with them for terms, etc.

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Absolutely free from vibration—always reliable—speedy—powerful. Exclusive features—tiller at right side, tilting attachment, non-sensitive carburetor and others. Ask for catalog.

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and CRUDE OIL ENGINES FOR ALL SIZES:**
IMPORTANT: Avoid delay by stating clearly
if for marine use or Stationary; also H.P.
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JACOBSON GAS ENGINE CO.
Saratoga Springs, N. Y.

KENYON BOAT TOPS

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FIGURE 1404

IMPROVED MOTOR BOAT CLOSET



Dimensions: 18
x 18 x 11"
high to top of
bowl; 2 1/2" cyl-
inder. For above
or below water
line.

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

Price.....\$25.00
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2 South Street, New York

IMPROVED THERMEX SILENCER
Increases Revolutions,
No Back Pressure!



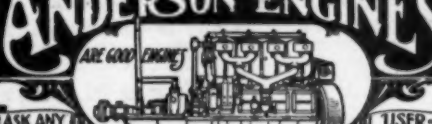
Cannot clog, nor collect salt; water cannot flow back to cylinder. No heating, no odor. Used from or under water—adjustable discharge. Lightest, cheapest to install. Free booklet shows why. Send for it to-day.

THERMEX SILENCER WORKS, 10 Lewis Street, East Boston.

Agents: Stewart & Co., Charlestown, P. E. I.; Marine Engine & Supply Co., Los Angeles, Cal.; S. V. H. Miller, Seattle Wash.; Burrard Iron Works, Vancouver, B. C.

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PROPELLER DESIGNS
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Whistle outfits, Mufflers, Muffler Cut-outs, Filters, Fog bells, Stair locks, Combination flag pole and electric aft lights, Spark, throttle and reverse controls, etc.

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Detachable rowboat and canoe motors. Single cylinder, Two-Cycle and Four-Cycle Twin models. Waterproof magnets, fly-wheel type, silencer and automatic reverse. Catalog free.

Over 60,000 sold.

EVINRUDE MOTOR COMPANY
458 Evereds Block, Milwaukee, Wis.

Go South Where It's Summer in Winter

(Continued from page 11)

folk. Weather, tide and the boat's speed must decide these runs. A ten-mile boat starting at daybreak can make Solomon's Island the first day and Norfolk the second. From Chesapeake City to Norfolk direct is about 205 miles.

The Chesapeake is well lighted and buoyed, but great care should be taken to keep clear of the fish traps which in places stand five or six miles out in the bay, and are so numerous that it is impossible to hold a straight course. The safest way to pass them is to pick out the head and give that a clearance of about twenty-five feet. If you have good weather and a fair tide take the main channel, using the course given in the Pilot Book between lights, and you will save the trouble of working through miles of fish traps.

Norfolk is a good, live town with up-to-date hotels, theaters, shops, etc., and it is well to put on a full list of supplies here, as Charleston is the next town of any size, although canned goods and dry groceries can be had at Coanlock, Manteo and Beaufort. In case you run up to Georgetown, S. C., a full list can be obtained at Ford's, with water, gasoline and a good welcome. If a stop for three or four days be made at Norfolk, pass through the drawbridge and into the "Hague," a fine enclosed basin where the local yachts are moored amid most pleasant surroundings.

The Albemarle and Chesapeake Canal is now a Government waterway about nine miles long with one lock and no toll. Since the Government has taken over the canal many improvements have been made, and this route is now much preferable to the long Dismal Swamp Canal. If you leave Norfolk early and the weather is favorable, you will find Roanoke Marshes a good place to lie for the night, but if your start is made at noon, the Lighthouse Service dock at the entrance to the North Carolina cut of the canal and a little further on the settlement of Coanlock afford tie-up places.

Famlico Sound should not be attempted in bad or uncertain weather. Wait for good, get an early start and you can make your next stop Beaufort. A fine harbor can be made after passing Neuse River Light by turning into Broad Creek. Adams Creek, ten miles nearer Beaufort, makes a good anchorage if darkness comes on. If you intend to go to sea from Beaufort follow the instructions found in the Coast Pilot, and by holding dead on the ranges no serious trouble will be encountered getting into this town or out of it. You will receive a most cordial welcome in Beaufort with innumerable mooring invitations, while gasoline and supplies can be obtained at standard prices.

If you intend to go down Bogue Sound and out through the inlet, stop at Moorehead City, where gasoline, water, supplies and free dockage are also obtainable. A reliable seafaring boat making a full 10 miles can leave Beaufort and take a direct course (see Coast Pilot) from the sea buoy for the slue at Cape Fear, which is about 100 statute miles distant. The slue is now buoyed with one black and two red buoys so arranged and colored as to be a part of the buoyage system into the harbor of Southport. In other words, the red buoys are to be passed to starboard going south. Don't attempt, however, to run the slue at night—in fact, don't run direct. Boats making 8 or 9 miles should take on supplies at Beaufort or Moorehead City and pick their way down Bogue Sound, which has lately been dredged and marked, this course saving about twenty-nine miles of ocean running or three and a half hours' time. An early start from Bogue or Bear Inlet brings you to old Mr. Slue in daylight in plenty of time to get into Southport before dark.

Now for a word about the inlets with which very few of the northern yachtsmen are familiar. These small gaps or breaks in the line of beach are sometimes bad places to try to use; usually, when wanted they are at their worst. By going down Bogue Sound you have a chance to see one of the inlets from the inside and will thus get some idea as to where to find the best water. All of the inlets on this part of the coast bear a general resemblance to one another, but the channels are subject to change without notice. As Bogue Inlet is buoyed and has a life-saving station where the best of information can be had regarding its conditions, it is a very good one for the novice to experiment with.

Bear Inlet in October, 1915, was at its best, with almost a straight channel in deep water. Gold Leaf, or as it is more usually termed, Corn Cake Inlet, makes unnecessary the passage of the slue, and is a short cut into Cape Fear River. However, high tide and great care are necessary in picking your way over to Southport. In good weather with a flood tide about half high you can run the inlet and if you still have an hour or more of daylight follow the Inside Route directions and make Southport; or anchor close to the beach, just south of the inlet and wait until the next day. Local boats frequent the small bay at this inlet and a pilot can be picked up at little expense. To enter the inlet work your way well into the shore about forty feet off the first line of breakers, passing the opening several times until you are sure of the water. The channels in most of these inlets are made by the ebb tide and run north and south, the bars usually making out from each end of the sand spit, and require careful navigating to keep off bottom. With conditions favorable I should prefer the slue or swash channel and the Cape Fear River to Southport.

This port affords very poor anchorage, the tide running very strongly, so that if there is any wind at all a good chop sets up that makes things jingle. The town is like some of the Long Island developments and most boats get going as soon as they possibly can. Gasoline, water and some supplies can be had, however, at a price. The small creek just west of Fort Caswell is well marked with finger posts and in case of a blow is a good place to anchor.

From Southport to an anchorage in Winyah Bay at Georgetown lights is about ninety-six statute miles, running as most boats do, down the beach. The run can be cut by making Little River one day and Winyah Bay the next. Most boats wait for good weather, get out at 4:00 A. M. and run down the beach as far as Little River; thence, if the weather is favorable, a course is set for Georgetown jetties. From here to Charleston via the inside route is certainly some pickings through channels often as deep as they are wide and none too deep at that. So with a good boat and good weather a lot of time can be saved and unpleasant sailing avoided by going down outside to Charleston Light—a distance of about fifty-five miles with two harbors to make in case bad weather sets in. These are Cape Rouain, eighteen

(Continued on page 56)

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Inclined Auto type and Vertical Cruiser gears of every description; 28 styles. A Wheel for every type of boat. Write for Literature.

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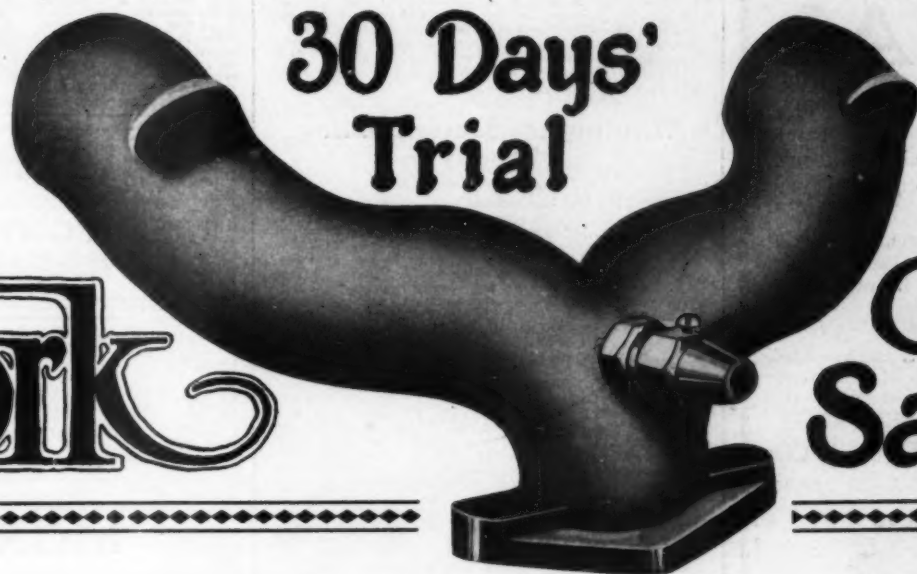
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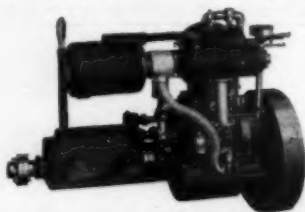
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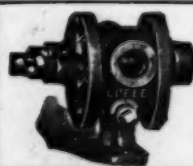
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(Continued from page 54)

miles below, and Bulls Bay Light, thirty-eight miles below Georgetown Jetties.

Charleston is a good place to put on supplies and to obtain repairs, but it affords very poor anchorage. Boats usually tie up at the Customhouse dock (permit required) or at docks nearby. The next stop, the Savannah Yacht Club, is on the Thunderbolt River, about three miles from Savannah, and visiting yachtsmen always receive a cordial welcome there. Trolley cars run into Savannah every twenty minutes, and gasoline, water and supplies may be obtained at Thunderbolt.

Jacksonville is the next large town and really the boat center for Florida cruisers. A big fleet is always to be found here en route to the North or South. Repairs, supplies and, in fact, everything wanted may be had in Jacksonville, but the anchorage is not as good as the importance of the place would warrant. Boats therefore usually tie up at the docks in Jacksonville or in South Jacksonville across the river. The charge for dockage at most places is one cent a foot per day.

Winning the Motor Boating Trophy

(Continued from page 35)

Caddy II, the boat which was entered but made the unofficial start in a vain effort to take away some of the glory of Countess' win, is one of the Houpla or patrol squadron models, 39.95 feet in length by 8.79 feet beam. In displacement she is not far from 10,000 pounds. Countess is 39.95 feet in length by 8.82 feet beam. On the waterline Countess has one inch greater length and slightly more than one inch greater beam than Caddy II. Both boats are powered with eight-cylinder Van Blerck motors, developing in the neighborhood of 200 h.p. at about 1,200 r.p.m. Caddy II is a round-bottom boat, pure and simple, while Countess is an out and out hand creation, a development of the designer's many years' experience with V-bottom hulls.

Of the other boat, Boomerang II, little was expected. She was launched only a few hours before the start of the race and her engines had their first try-out in the four-mile run from the builder's yard to the starting line. Boomerang II, like the other boats in the race, was powered with Van Blerck motors, but with two eight-cylinder machines instead of one.

Boomerang's owner, Huston Wyeth and his amateur captain, Mr. Van Brunt, showed their true sportsmanship virtues in even making a start. They had promised the Committee several weeks previously that they would be at the line when the gun was fired and they kept their word even though it meant working twenty-four hours a day and making all kinds of personal sacrifices. Such spirit and enthusiasm if it were present in more motor boatmen would tend toward much more successful racing than we have had for the past year or two. It is to be contrasted to that of Caddy II, which appeared at the starting line in seemingly perfect condition, but refused to race for the reason mentioned above.

Neither was Countess without her share of loyalty either, for while taking part in a scrub race Down East just a week previously, she had met with an accident which completely wrecked her motor, making it necessary to take it down and replace several parts. The new parts did not arrive from the factory until twenty-four hours before the start and even after the motor was reassembled a 150-mile run to the starting line had to be made. The race to reach the starting line was started after dark Friday night, and Point Judith was reached before stopping. At 2 A. M., Countess was again under way headed west, and ran full speed, arriving at the line just five minutes before nine, the scheduled time for starting the race. As Caddy II had not put in an appearance the Race Committee decided to allow a postponement of one hour, which Countess used to good advantage in filling up her fuel tanks.

Of the other entries, Edamena II, Vision and Elithro II, the first-mentioned boat was disabled only a few miles from the starting line after he made a run of over 100 miles from her home port, Fall River, Mass. Even after this hard luck was encountered, her owner, E. F. Charlton, made every effort to have repairs made in time, but there was a hitch somewhere. Vision and Elithro II made no effort to get to the start.

Countess' run for the first three hours, while Boomerang was in the race, was a record-breaker. From Execution Light down to Bartlett's Reef Light-ship her average speed was 29½ miles an hour. At this point Boomerang withdrew and ran into New London, while Countess cut down her speed and jogged along easily to the finish off the New Bedford Yacht Club, which she reached at 4:57:41, making her elapsed time for the 140 nautical miles 6 hours, 57 minutes, 41 seconds, which is equivalent to a speed of 23.1 statute miles per hour.

The New Bedford Yacht Club, under the leadership of Commodore Mark T. Vincent, had made elaborate plans to entertain the visiting racing men in their Padanaram clubhouse. Their harbor was full of motor craft all fully decorated for the occasion, and a buffet luncheon was planned to be served as each boat arrived, with a real Rhode Island Shore Dinner later in the evening.

The Committee of the New Bedford Yacht Club consisted of W. H. Chase, H. I. Wordell, H. A. Linfield, E. L. Deane and E. H. Sistrare, while the Regatta Committee of the Long Island Power Boat Association handled the details at the western end.

Taking the Gold Cup to Minneapolis

(Continued from page 9)

very materially in the interim. Of the competing craft Miss Minneapolis, Baby Marold and Miss Hamtramck were this year's productions, while the others were at least a year old. Of the first three mentioned one—Miss Minneapolis—could be rated as a success. Baby Marold was far from a finished product and Miss Hamtramck was so outclassed that she retired after two rounds of the first heat. This only proves again our old contention that a speed boat cannot be developed and perfected in a year's time. Few of them are worth little the first year and most of them nothing. Even Miss Detroit, which was so successful in 1915, is better, faster and more reliable now than a year ago.

But in spite of this Miss Minneapolis is, in our

(Continued on page 62)

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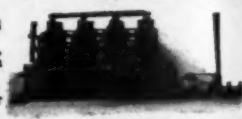
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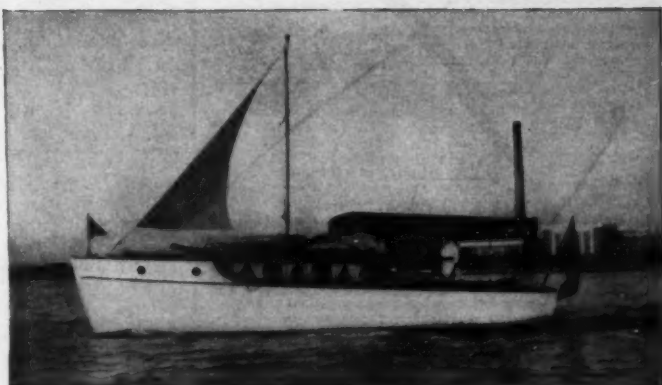
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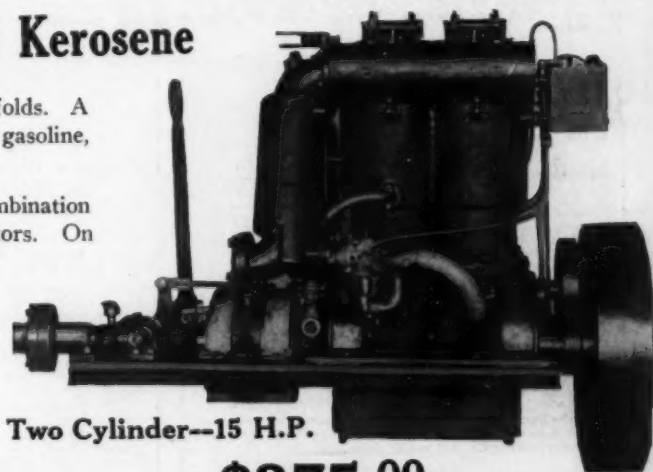
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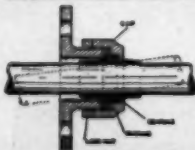
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Practical Wireless for Motor Boats

(Continued from page 13)

Every connection should be a perfect one, for the currents induced in the wires by incoming signals are so weak that a poor connection seriously interferes with their proper reception. In the case of phosphor-bronze and copper, in making a joint each piece of wire should be carefully sandpapered, joined, and then soldered. In the case of aluminum the wires should be sandpapered, then connected, and finally soldered, too, if a suitable solder is available. If not, each joint should be wound with tinfoil and taped with a good grade of electrician's tape.

The ground connection, as was stated in the September issue, is a simple matter where the motor boat has a metal hull. A No. 4 B. & S. gauge copper wire, rubber insulated, is soldered to one of the metal plates at some convenient point. If the hull is not of metal, an alternative is to solder the same wire to the water intake pipe of the engine, or to a ground clamp which in turn is placed around the pipe.

Before leaving the subject, it is necessary to devote a passing word to the grounding arrangement of aerials as a protection against lightning and atmospheric electricity. For an aerial, presenting as it does an excellent conducting surface to lightning, must be grounded when an electrical storm is in the vicinity. This is accomplished by the use of a single-pole double-throw switch placed outside the wireless station and wired as indicated in the sketch. It will be noted that when the apparatus is not in use whether there is a storm or not, the switch is thrown downward, grounding the aerial. To operate the apparatus, on the other hand, the grounding switch should be thrown upward. The switch, which is obtainable at any electrical supply store, should be one with a rating of 250 to 600 volts, 100 amperes, with a porcelain base if possible, or a slate base. If it is the latter, one will do well to give the base a coating of shellac, for slate readily absorbs moisture otherwise, resulting in the leakage of current. At any rate, it will be necessary to place the grounding switch in some form of weather-proof box with a lid, so as to keep out the rain and moisture. The ground wire from the switch should be entirely outside as far as possible, and as straight as possible, without sharp turns of any kind.

With a properly grounded aerial on board his boat, the owner may feel absolutely safe from lightning discharges. For there is no better lightning rod known than an efficient aerial, properly grounded; and whatever bolts of lightning strike, the wires may be depended upon to find a quick path to the ground without inflicting damage that might otherwise arise if no such protection were afforded.

Taking up now the existing legislation that affects wireless, we find that it can be condensed into the eight parts which follow. From a study of these it will be apparent that it is not at all the Government's intention to circumscribe the activities of amateur wireless operators beyond reasonable limits:

1st. He must not use a wavelength exceeding 200 meters for transmission, nor a coil or transformer (apparatus used in generating the high voltage current for creating the waves) exceeding 1 K. W. If, however, he is less than five nautical miles from a Government station, his transmitting power is limited to 1/2 K. W. The term wavelength, as previously stated, is the measure of the waves used in wireless transmission. Owing to the fact that the aerial on board a small boat is of performance limited to a short span, there is little fear that a station on shipboard will exceed the specified 200 meters wavelength. And again, since the boat is naturally a mobile station, the power of the transmitter may be 1 K. W. if desired, although it so happens that the small aerial available would allow with difficulty, if at all, the employment of that amount of power. In most installations one-quarter or one-half kilowatt is, perhaps, all the power that can be used.

2nd. It is not necessary to take out a license provided that one's transmitting set is not sufficiently powerful to transmit over the boundary of the state in which it is situated, nor powerful enough seriously to interfere with the reception of messages from outside the state by other stations. Thus it will be noted that the motor boat set, if used judiciously, can take advantage of this clause.

3rd. If only a receiving set is used, no license of any kind is required.

4th. Should the amateur wish to use a higher wavelength or greater power than that laid down by the law, the matter must be taken up with the Secretary of Commerce and Labor. If sufficient cause can be submitted for additional power and wavelength, permission is granted. However, this clause need not interest the small boat owner, for reasons previously made clear.

5th. Since it is physically impossible at the present state of the wireless art to make wireless messages absolutely secret, the law has been called upon to protect both the sender and the recipient of dispatches. All operators are required to preserve the secrecy of messages sent or received by them if these messages are of a private nature, upon penalty of a fine or imprisonment. Provided the boat owner use his set for his own pleasure and not for commercial purposes, this clause need not concern him.

6th. It is imperative that the sending set use sharp and pure waves. This is a matter of proper apparatus and correct manipulation, and is a subject covered thoroughly in every article or book dealing with the installation and operation of apparatus.

7th. Under no circumstances should an amateur or anyone else send out false messages, even in jest. The penalty, according to the law, for persons apprehended sending out false dispatches of any kind will be a fine up to \$1,000 or imprisonment up to two years or both. In case of false distress signals the perpetrator is liable to a fine of \$2,500 or five years' imprisonment, or both.

8th. The operation of a wireless station without license in instances where the law makes it plain that a license is necessary is punishable by a fine of not more than \$500 and the forfeiture of the apparatus. If the motor boat owner complies with the letter of the law, he need not fear the punishment meted out to offenders of this clause. Further, this does not apply to receiving apparatus only.



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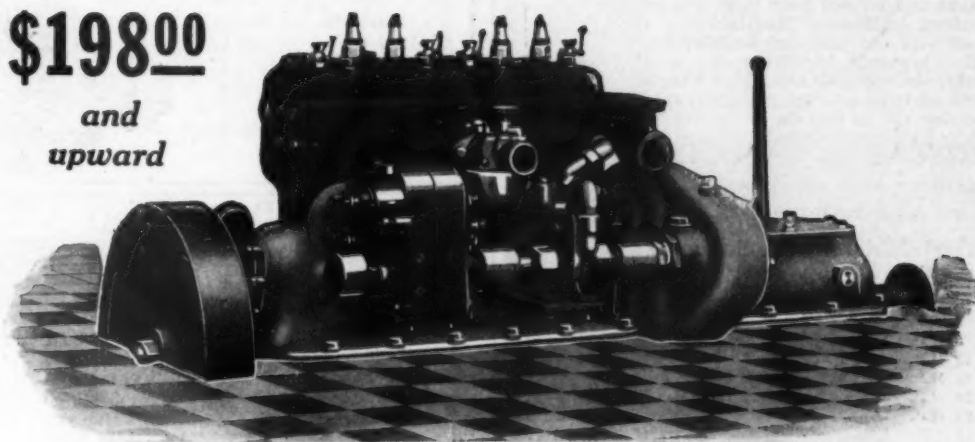
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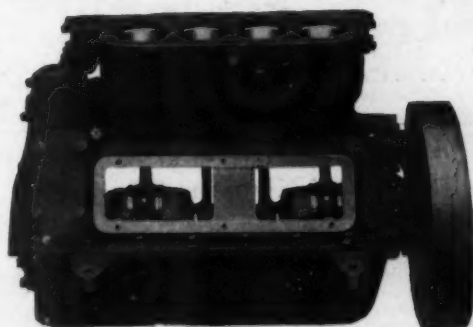


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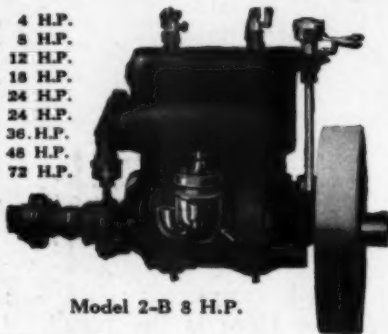
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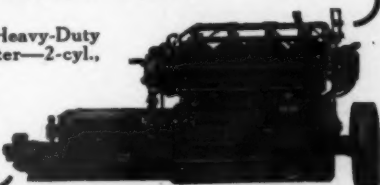
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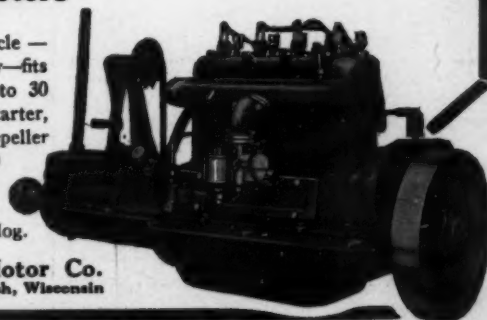
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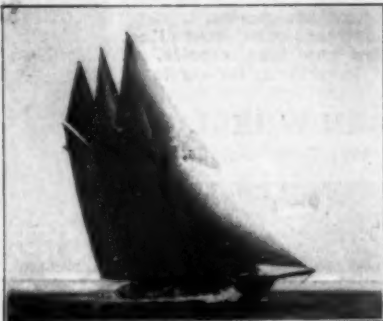
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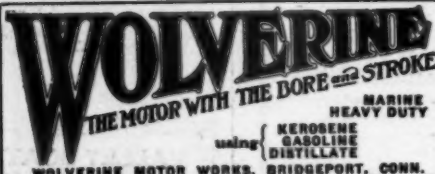
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(Continued from page 56)

opinion, the greatest boat ever built. She is a vast improvement over her predecessors, Miss Detroit, Baby Speed Demon II, the Baby Reliance, Presto, Baby Courier, etc., etc. In workmanship as well as design her designers have done an excellent job. When it is remembered that Miss Minneapolis was practically the lowest powered boat in the race, yet the fastest, the force of these statements will be apparent.

The crew of Miss Minneapolis were also the most expert, and played the game to win. As soon as they got their craft so that they led by a comfortable margin, they would slow down their 250 h.p. Sterling and jog along at a speed just sufficient to prevent the other boats from closing up the gap. Only twice during the three days' races were they called upon to open up Miss Minneapolis, and even on these occasions the spurt lasted for barely a lap. On the second day, after Baby Marold had made a very poor start (getting over the line a minute and 13 seconds late, yet overhauling the entire field, with the exception of Miss Minneapolis and Miss Detroit, and being only 13 seconds behind the leader), was one occasion when Miss Minneapolis was forced to show every bit of speed she had in her, for Baby Marold was overtaking her so fast that for about 30 seconds' time things looked bad for the craft which had not yet met defeat. However, the scare was not long lived, as it was only a few minutes after that Baby Marold caught fire just as she was about to pass Miss Minneapolis, and went to her watery grave almost before the boats had made another lap.

The other occasion when Miss Minneapolis showed her real speed was in the last day's race. As usual, this boat had led the field over the starting line and continued to hold the lead for the first 15 miles, but on the fourth time around Miss Detroit was leading, coming down the back stretch of the course, and completed the fourth round one minute, seven seconds ahead of Miss Minneapolis. Probably this was the first instance in the career of the latter boat where trouble was experienced with her power plant, and on this occasion an exhaust valve stuck, and the crew were forced to make repairs without stopping the motor. They were successful in their efforts and in the fifth round they got their boat up to speed again and finished the lap only 35 seconds behind the leader. It was then a toss-up as to whether Miss Minneapolis would be able to catch Miss Detroit before the finish line was reached. In this she was all but successful, for only one second of time separated the boats when the gun from the committee boat announced that Miss Detroit had crossed the line, winner of the third and last heat. Miss Minneapolis' time for the last lap had been 6 minutes, 11 seconds, which is at the rate of 55.78 miles an hour, the fastest lap of the three days' racing, as well as the fastest lap ever made in competition, not only for the Gold Cup, but by any motor boat anywhere in the world. She had even bettered by 3 seconds the great one-lap spurt made by Baby Marold before she caught fire.

What promised to be a very successful and perhaps the fastest express cruiser contest ever held, petered out after the first heat of 10 miles. Six express cruisers were entered for this race, but only four of them were ready for the start on the first day. At the end of the 10-mile race, the first and last boats were separated by only one minute and 22 seconds. A boat known as Wood-Hydraulic won first place by 4 seconds from Betty M II, owned by Commodore Charles W. Kotcher. The owner of Betty M II promptly protested Wood-Hydraulic as not being an express cruiser, according to the 1916 A. P. B. A. rules, and the race committee sustained the protest.

The second heat was scheduled to start on Monday at 5.15 P. M. The preparatory signal had been given and Betty M II and Aeolus were just below the line ready to start across on the starting signal. Venetian Maid, winner of second place in the first race on Saturday, had been waiting for the start also, but for some reason, her owner decided he could do better if he got into a new position, so he decided to circle the committee boat to do so. In jockeying around he barely missed taking the bow off the officials' boat, and then circled just under her stern, heading for Betty M II directly at right angles, no less than 50 yards away. The helmsman of Venetian Maid must have become confused in his maneuvers, for without giving a signal or without the slightest warning, he allowed the sharp bow of his craft to ram Betty M II somewhat forward of amidships, almost cutting the latter boat in two. Aeolus, who was standing by alongside, promptly passed Betty M a tow line, and got her into shallow water before Betty M began to settle. The race committee immediately called off the race for the day and later postponed the event until proper repairs could be made to the hull of Betty M II.

A complete summary of the 1916 races for the A. P. B. A. Gold Challenge Cup, held at Detroit, September 2, 4 and 5, together with a comparison with other racing events, will be found in the tables on pages 7 and 34.

Motor Boats Win War Games

(Continued from page 16)

Their knowledge of local aids to navigation and compass courses could be made extensive enough to permit them to navigate with safety in times when the aids were removed from the harbors of our coast. They were familiar enough with the use of the compass and chart to be put aboard a much larger naval or merchant ship and immediately adapt themselves to the new conditions.

The boats of Group IV were typical of perhaps 75 per cent. of the type known as cruisers owned by American motor boatmen today. They represent a first cost of under \$3,000, require a power plant of about 20 h.p. for an 8-9 knot speed and in most instances are maintained without the services of a paid hand. They are the type and size of boat which does the most to awaken in a man the love of the sea or to broaden and develop this love if he already has it. They are the craft owned by the men who will be least affected or attracted by the popularity of the low-priced motor car of today which is as seriously affecting the growth of the love of the sea in the American boy as our laws are preventing the rehabilitation of the American merchant marine on the high seas.

The conditions during the motor boat maneuvers were made to resemble actual warfare as far as possible. The Navy Department assigned the battleship Kearsarge, which was taking part in the regular civilians' cruise, the torpedo boat destroyers Starrett and one other, and four submarines of the latest L type, numbered 40, 42, 49 and 50. The work with the submarines was carried on each afternoon, and in the evening the destroyers under the various conditions attempted to attack the battleship Kearsarge by running through the patrol lines established by the motor boats.

(Continued on page 78)

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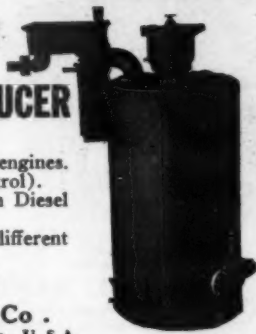
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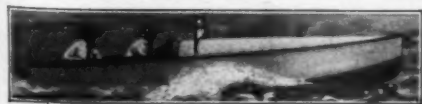
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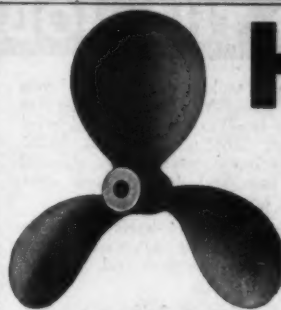
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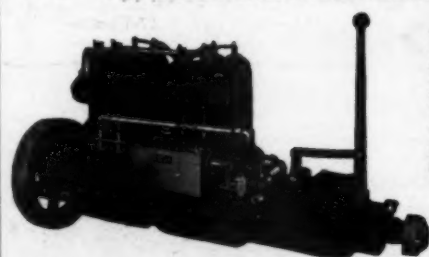
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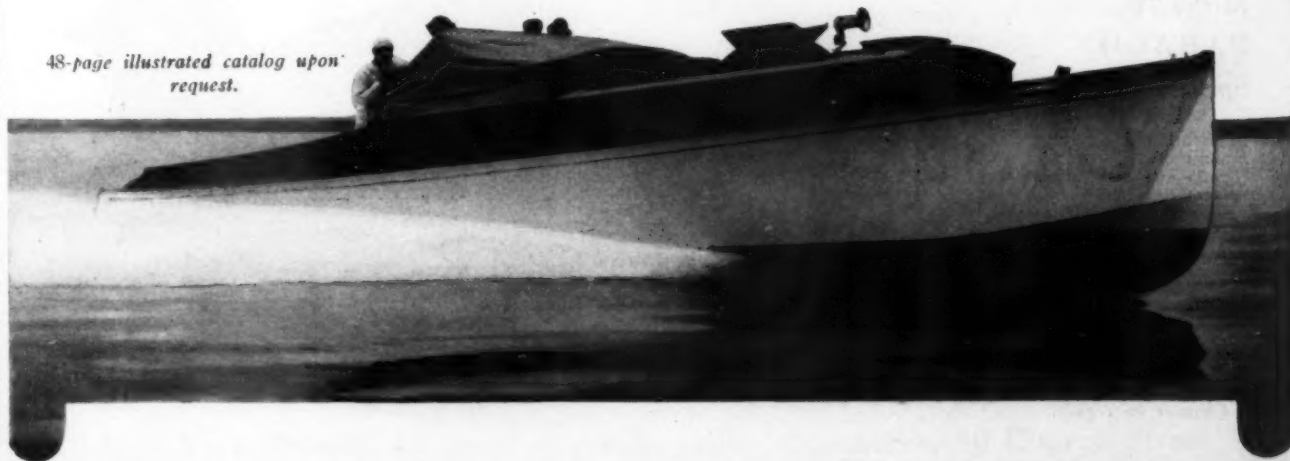
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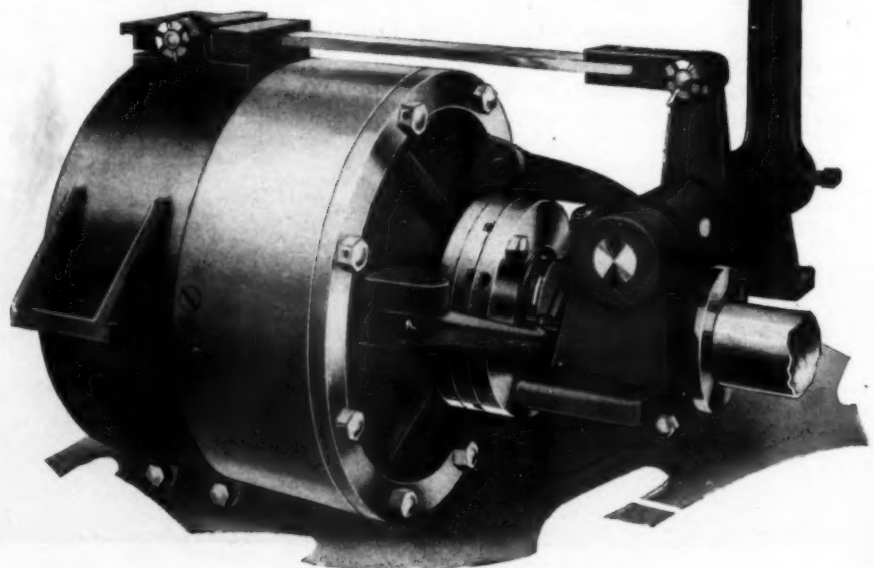
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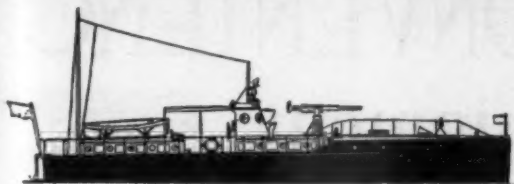
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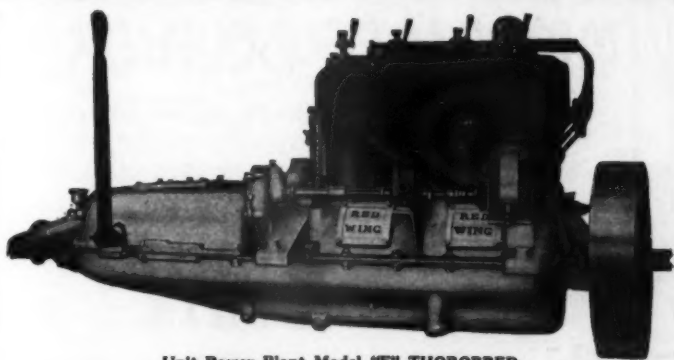
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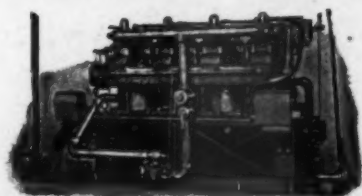
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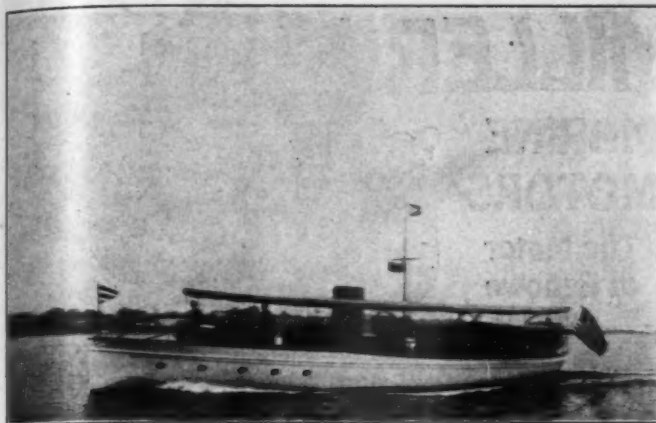
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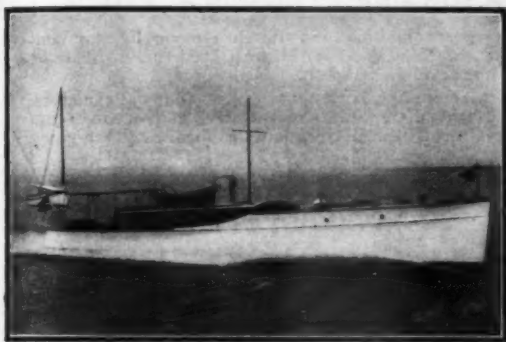
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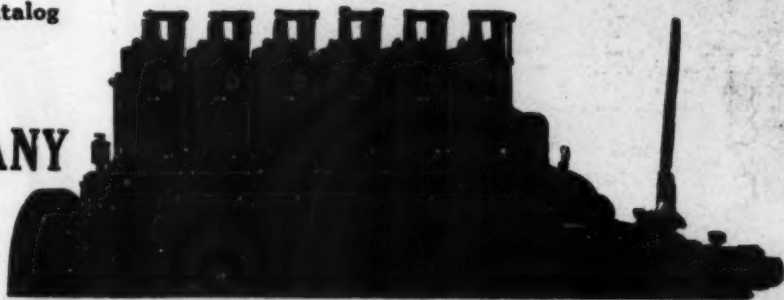
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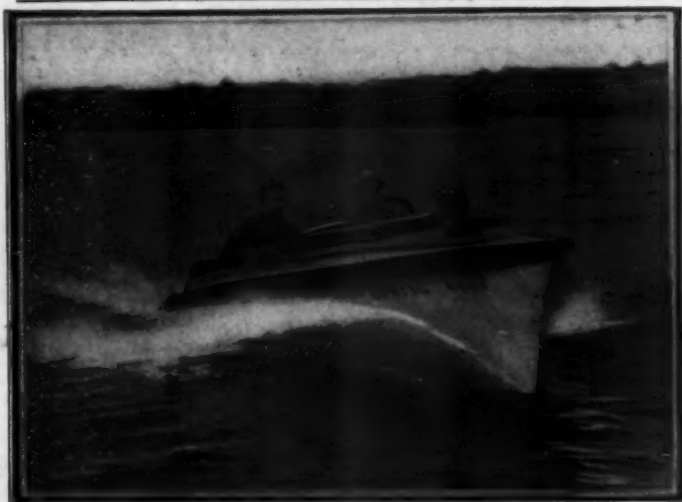
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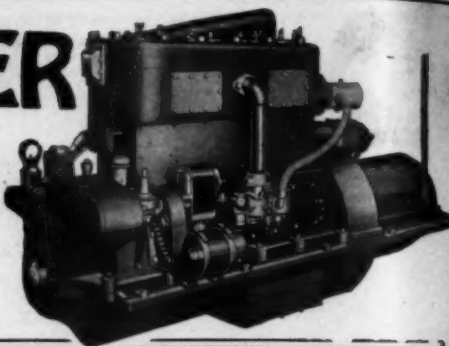
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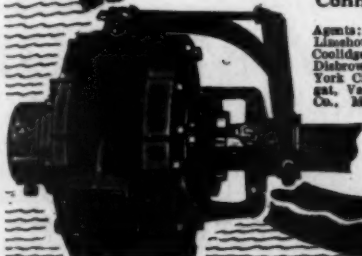
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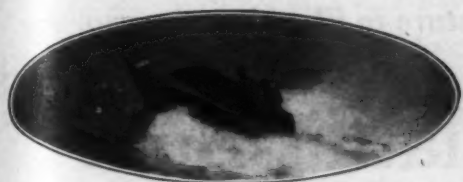
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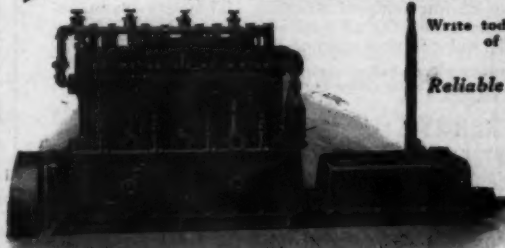
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The boats already built and the new boats on our ways assure greater predominance in 1917 than ever before.

NOW READY FOR COMPLETION

—three 43-foot boats

similar to those which made such a hit last season. If you want us to complete interior furnishing to your taste, order promptly.

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Cooper's Point, Camden, N. J.

Cut shows one of half-drawn 43-ft. houseboats of the one-man-control type created by us. Economical in upkeep and in gasoline consumption. At home in Florida or along any bay, river or inlet along the Atlantic Coast.



"Genuine Detroit" Oilers

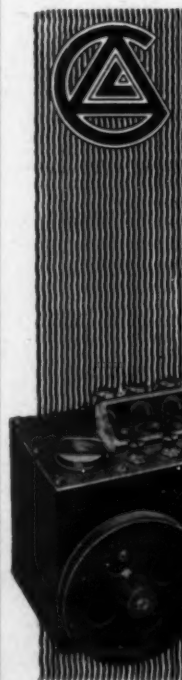
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World's Largest Lubricating
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Made in styles and sizes for every kind of gas, gasoline or oil engine—tractor, truck, marine, stationary or automobile. There is nothing "hit or miss" about these efficient oilers. They are free from complicated mechanism and do not clog up and get out of order.

Every change of engine speed regulates oil feed automatically in exact accordance with need of engine. Positive force feed drives the oil to all frictional surfaces.

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CHICAGO DETROIT LUBRICATOR COMPANY LTD. WILKINSONVILLE, OHIO



Ho Hum! Vacation's a thing of the past.
But next year—Wow! two portions of Wow!

You will have that fast ALBANY Run-
about to add "life" and zest to your vacation
—What?

Of course you *can* get along without one
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or by having none at all but—to own one
of the

Albany Boat Corporation

outfits is to insure *yourself and family* an
enjoyable summer.

They are safe, dry, comfortable and fast.

Come and visit us—we will be glad to
show you how *real boats* are built.

Catalogs may be had for the asking.

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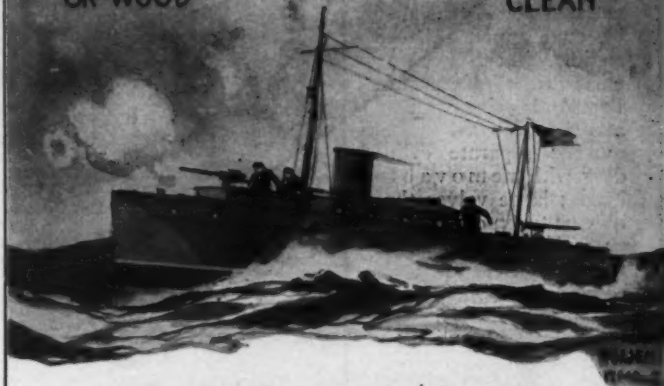
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FOR STEEL
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GIVES INCREASED SPEED TO FAST VESSELS

ON CRUISING YACHTS—It stays clean, preserves the wood, saves heavy
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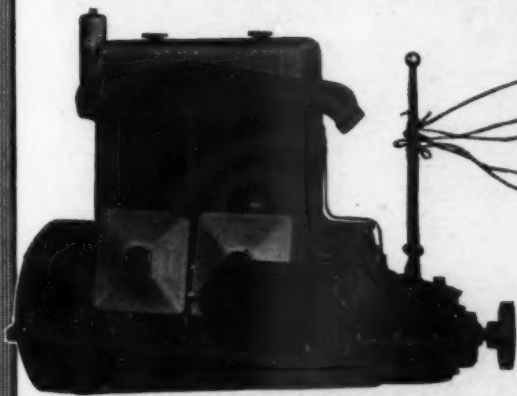
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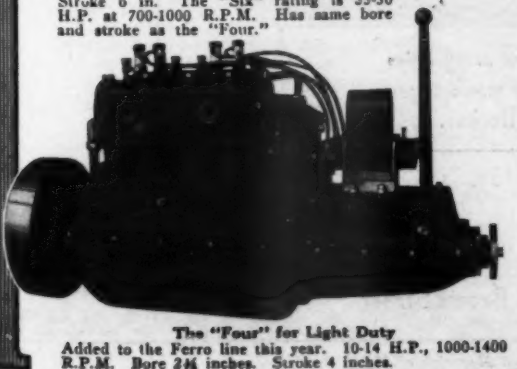
FOR TOPSIDES—Semi-Enamel Yacht White and Gloss Black.

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MARINE ENGINES FERRO



The "Four" for Medium Duty
20-30 H.P. at 700-1000 R.P.M., Bore 4 in.,
Stroke 6 in. The "Six" rating is 35-50
H.P. at 700-1000 R.P.M. Has same bore
and stroke as the "Four."



The "Four" for Light Duty
Added to the Ferro line this year. 10-14 H.P., 1000-1400
R.P.M. Bore 2 1/4 inches. Stroke 4 inches.

They Speak for Themselves

It doesn't take an engineer to appreciate what mono-bloc
casting, overhead valves (without cages), detachable cylinder-
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parts, mean to the performance of a marine engine.

The increased power, absence of vibration, unusual acces-
sibility and other advantages that result from these features
of construction are all to be found in the Ferro Four-Cycle
"Four" and "Six," for medium duty. Write for catalog
now.

Thirteen Other Ferro Models—The four-cylinder, four-
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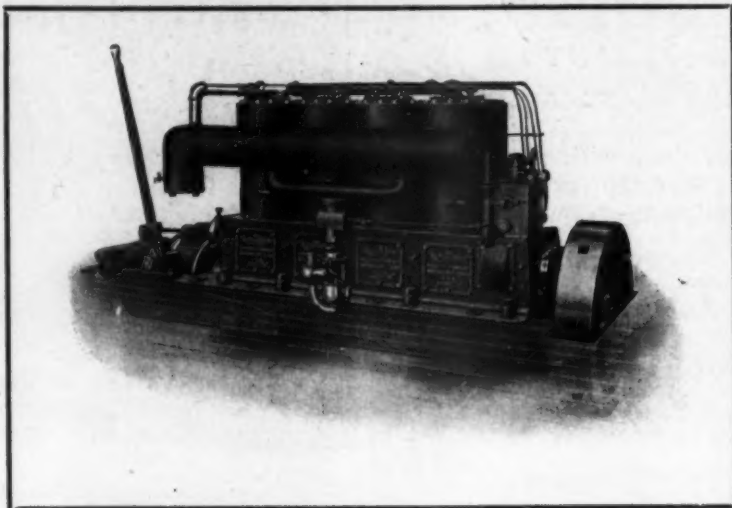
THE FERRO MACHINE & FOUNDRY CO.

1010 Hubbard Avenue, Cleveland, Ohio, U. S. A.

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Advertising Index will be found on page 38.

"The Automatic"

An engine that is powerful, ready to respond to every demand that may be made upon it. An engine with all working parts easy of access. Bronze bearings that may be adjusted or removed; separate cylinders with removable heads; large valves that may be taken out and re-ground without disturbing any adjustments. A combination intake and exhaust manifold that assures perfect combustion.



An engine equipped with an enclosed lubricating system and a speed governor. An engine that is suitable for any yacht or cruiser. Built in four and six-cylinder models, 30 to 150 H.P. Remarkably economical of fuel and oil, and so built as to be practically free from vibration. Tell us what your requirements are—so that we may send full information and specifications.

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32-Foot Sea Sled for U. S. Navy Dept., Running at 40 Miles
This boat has planed with twenty-four passengers.
Send 25c in stamps for latest bulletins.

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Here Quality Power Yachts are Built

THE above shows a partial view of our plant. It is the home of many of America's finest pleasure yachts. Here the most modern equipment is augmented with the best naval engineering brains and most skillful craftsmen the trade affords in the production of

MATTHEWS CRAFT

The name "Matthews" on power yachts has the same meaning as "Sterling" on silver. It is the undisputed mark of quality—a mark that has real money value should you ever wish to sell your Matthews Craft.

OUR WINTER STORAGE FACILITIES

are unexcelled. Our marine railways, electric lifting docks and every detail for carefully and safely storing your craft in winter is of vast importance to you. In addition, we carry a stock of yacht equipment, castings and fittings of all kinds. Awnings, cushions and interior draperies can be supplied at our plant and your boat prepared in every detail for early spring use. Write for Literature, Plans and Estimates.

THE MATTHEWS BOAT COMPANY, 602 Laurel Avenue, Port Clinton, Ohio



Kingston

"Enclosed Type"

Carburetor



YOUR ENGINE ISN'T WORN OUT

When an engine commences to lose its original power and quietness, inexperienced owners are liable to think it is wearing out. But the expert knows that, with reasonable care, motor wear is almost a negligible factor.

Practically every motor owner keeps his valves ground, spark plugs clean, bearings tight and lubricator filled—but overlooks the biggest leak in motor efficiency—carburetion. More engines are giving their owners trouble for this reason than from any other cause.

Perhaps all your motor needs is a new carburetor. At any rate it is worth trying. And we offer you the opportunity to try the best carburetor ever made for a marine engine, without risking a cent.

Gasoline has changed—gotten poorer in quality. Old types of carburetors won't handle it efficiently or economically. And the engine is blamed when the fault is in the carburetor.

The new Kingston Carburetor was designed especially for the present day low grade fuel. It is the simplest carburetor you could ask for—only one adjustment—and is particularly adapted for marine use. Any novice can keep it in adjustment under all changing conditions.

SOLD ON THIRTY DAYS TRIAL

Write us today for prices, trial offer and guarantee. You can try a Kingston on your engine and if it doesn't give satisfaction we will refund your money. You take no risks.

If you are getting a new engine, give it the best carburetion from the first—specify a Kingston

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YOU CAN'T ECONOMIZE ON MAGNETOS

THE chances you take with an inferior grade of magneto are not worth the money you think you save.



The Berling Magneto

is gaining in popularity by leaps and bounds. More and more marine engine manufacturers are equipping their engines with the Berling Magneto—and the other makers—who produce good engines—will give you a Berling on your new engine if you ask for it. But it costs you no more. They pay the extra expense. The Sterling, Van Blerck, Speedway, Universal, Winton and Wisconsin—all offer the Berling Magneto.

Berling superiority lies in its construction. It is all inside of a one-piece casting, making it water, dust and oil-proof.

It is reliable. That is why aviators want it on the aeroplane engines on which they stake their lives.

Ericsson Manufacturing Co.

1105-1145 Military Road

BUFFALO, N. Y.

U. S. A.

Motor Boats Win War Games

(Continued from page 62)

The motor craft flew the American ensign in place of the regular yacht ensign. Signal shapes—the cone, drum and cross—were used in the maneuvers, combinations of two or three of these shapes being used for the tactical signals. The signals were displayed from each group flagship and repeated by the rear boat in each group. They were answered by the other boats by the international code answering pennant and were executed when the signal was hoisted down. The Navy Deck and Boat Book was used during the maneuvers, and a series of countersigns or recognition signals was adopted. Both the demand and the reply signals were changed each day and were considered secret and confidential by the motor boat fleet.

Communication between the boats in the daytime was by means of the wigwag code. Flag B of the international code bent on a staff was used as the official wigwag flag and flag Z similarly bent was used when it was desired to transmit unofficial messages. The day signal that a submarine had been sighted and destroyed was the firing of a smoke bomb from the motor boat which discovered her. In the destroyer attacks at night, a Very pistol was used. A red star indicated that a motor boat had discovered a destroyer attempting to work through the line, while a green star indicated that the destroyer had successfully passed through the patrol line and was in a position to attack the battleship.

Each boat was equipped with an Eveready electric hand torch and a tin tube about one foot long, just large enough to place the torch within it. This was for the purpose of giving the night countersign without the light showing over a greater area than necessary. Each boat was also equipped with a blinker light at the masthead or on the gaff, properly connected through a sending key, so that all boats of the motor boat fleet were always in communication with each other.

The outer motor boat patrol line for the night maneuvers extended from Egg Rock to a point one and a half miles east of Graves Light, and the inner line from Shag Rocks, Nahant, to Graves Light. Group I and II occupied the outer line and groups III and IV the inner line. Odd numbered groups took the southern half of the respective lines.

ABOARD KEX II

The bulk of the Squadron assembled at City Point the night before the battle and ran out to stations charted on three lines outside of Boston Harbor. The sea was very rough and the rehearsal was a severe test. On Tuesday, the fifth, the four groups reported off the battleship Kearsarge stationed in Broad Sound and put their captains aboard in a wet, choppy sea, to the intense amusement of the enlisted men and civilians aboard the battleship. Commander Gelm issued written orders with a short verbal explanation, the captains returned to their yachts, and the divisions moved to the flotilla base off Nahant, about two miles in-shore from the flagship.

At seven P. M. the patrol flagship displayed the drum-cross-cone, "Get underway, regular order, anchors were weighed and the squadron started to sea in single column. The base line of defense was drawn from Nahant to the Graves Light, the outermost points of the harbor and about 3,000 yards off Kearsarge. Groups III and IV took up stations on this line 500 yards apart. Two thousand yards further out Groups I and II patrolled. At eight o'clock every light was switched off and the boats started out at right angles to the base line, at six knots, ran for ten minutes, turned and ran back for ten minutes, repeating this patrol on the exact interval. Captains were supplied with Very pistols with which to shoot a red star high in the air upon sighting the enemy. The latter were two torpedo boat destroyers which, in order to "sink" Kearsarge, must cross the inner base line undiscovered by the patrol.

The crews were tense, quiet and eager with their best sporting blood up. Eyes were strained to sea. Then came the fog, like a blanket, blotting out every aid to navigation and making position a matter of guesswork. Motors were stopped and a deathlike stillness enshrouded us. Listen! Over to port! Hear that swash? How far off is it? It is coming nearer!

Then out of the fog slips a lean black hull. Bang goes our red rocket. She is discovered. We start up the motor, push in the clutch, open the throttle and tear across to intercept her. She surrenders—that is, turns on her running lights. We hail her and voice comes back "Destroyer Starrett."

The thrill is over and we turn back to try to re-locate our position in the fog on a tide and wind estimate. Hardly five minutes elapse when we again hear the enemy and a second destroyer steals through the murk, straight at us. We switch the lights on in a hurry and her whistle roars out three blasts as she reverses her engines to prevent collision.

On succeeding nights this game is repeated. The enemy tries a heavy smoke screen, but wherever he ventures in towards the quarry some vigilant patrol boat spots him, up goes a rocket, the battleship stabs the darkness with her searchlights and the attack fails.

The afternoon work deals with the submarine. The first day four submarines are at sea. The patrol takes station. The first submersible comes in, submerges and porpoises across the line, that is, pokes her periscope up for a peek every few minutes and finally comes up awash. We now know what they look like and the game is on. The enemy must come in under water by dead reckoning and then when nearly within range porpoise for a final bearing before making the run to discharge her torpedo at the battleship. The patrol must catch her when she pokes up. Presently, bang off goes a smoke bomb from the outer patrol and then later one of our line spots her and off goes another. She is hit and comes to the surface.

The second day found the patrol extended over an area of nearly a hundred square miles, every boat in the center of a four-mile circle, or as Commander Gelm said, "Every duck in the middle of her own puddle." The submarine is supposed to have exhausted her batteries and must come to the surface to recharge, at which moment she must be caught. On this day we saw naught but smoke bombs miles away showing that captures had been made. The succeeding days were taken up with similar submarine search.

This is the story of a week's hard but fascinating work, a work that is only just started, for it need not be supposed that in war times the enemy would be so courteous as to approach only in certain directions, at certain times and in good weather. But we have learned what routine means, we have learned much about navigation, cross bearings, signaling, night work, how to cook and eat underway with minimum discomfort, general scheme of patrol, attack and defence and the appearance of war craft under all conditions.

Considering that there was no comprehensive organization, that plans made and orders given beforehand at Boston were countermanded at the last minute by the commanding officer of Kearsarge, and that all through the week assignments were constantly changed by the naval officers and not very well understood by the participants on account of changing orders at the last moment, the results were highly gratifying and spoke well of the spirit of co-operation among the volunteers, and the patience and perseverance of the Commander in Chief Captain Gelm, the Patrol Commander R. F. Bernard, and Division Commanders Roger Upton, C. Neal Burnell, E. S. Welch and John L. Saltonstall.

WITH THE NEW YORK FLEET ABOARD SUNBEAM II

The motor boats that mobilized in Gravesend Bay under the direction of the Navy Department received a hearty welcome from both the naval officers and the commodore of the Atlantic Yacht Club. After a short meeting on the U. S. S. New Jersey for the purpose of organization, orders were issued and the captains of the little flotilla began the work of drilling.

The first few days were occupied in maneuvers which were for the purpose of unifying the three groups. After the men had familiarized themselves with the geometrically formed shape signals, the groups were brought together in flotilla formation. The rapidity with which the crews of the pleasure boats grasped the drilling is the best means to demonstrate how keen their interest was. Mistakes were so uncommon that when one was made it was readily forgiven.

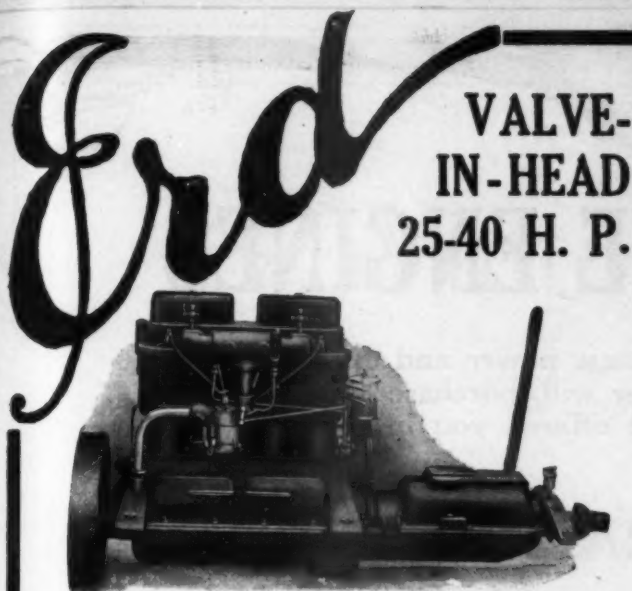
Now that the boats could maneuver as a unit, the more interesting work followed. This consisted of locating "submarines" by their "periscopes," pieces of wood six inches square, weighted on the bottom, painted gray and showing about two feet above water, and forming a screen about the battleships to detect the approach of torpedo boat destroyers. The search for the periscopes was very successful, all being found, as was also the discovery of the destroyers.

The group commanders were told that two destroyers would try to enter New York harbor and torpedo the battleships. This attack was planned under cover of nightfall, and orders were given to the little flotilla to go out without lights and prevent the enemy from entering the inner bay.

This feat was accomplished in a most spectacular way. About midnight the destroyer Warrington without lights entered Ambrose Channel somewhat screened by the yacht Gem. The vigilant crews of the mosquito flotilla detected the approach of the vessels out of the darkness and fired a red ball from a Very pistol, which showed that the enemy had been seen and that the motor boats had accomplished their mission.

Much might be said about the unusual skill with which each civilian handled his boat. And much more might be written concerning the fine determination to learn and work according to the methods of the Navy. Naval officers are made only after years of study and experience, but such civilians as volunteered their boats and services to the Government can be of inestimable value as a coast patrol in time of war. Ships and boats can be easily secured, but trained men are difficult to find in a case of emergency.

Even though the boats that took part in the maneuvers off Gravesend Bay may not be fit to perform the duty for which they drilled, their crews would be worth much in manning boats built exclusively for scout duty by the Navy Department.

**\$460**

Standard Type. Iron base and crank case, for heavy and medium duty work, speed 200 to 900 R.P.M.

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High Speed Type. Aluminum base and crank case, for fast launches and hydroplanes, speed 200 to 1500 R.P.M.

Price includes Magneto, Joe's Reverse Gear and all usual motor equipment

To the undisputed Erd Quality we have added the undisputed superiority of Valve-in-Head design. And by producing these motors in the quantities warranted by the long standing Erd demand we have been able to reduce the manufacturing cost to a point which permits the exceptionally low prices quoted above. If exact figures were obtainable, we believe this particular Erd model would be found the most popular marine motor of its size and type on the market.

Tell us about your boat, what speed you want and let us submit a proposition that will interest you.

ERD MOTOR COMPANY

Saginaw, W. S.,

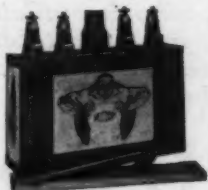
Michigan, U. S. A.



A handsome spark plug case and a spark plug wrench . . Free
With four spark plugs that \$4
will outlast your engine . . \$4



Mail us a \$4 check or money order for four Splitdorf Spark Plugs (the plug with the Green Hex Jacket). We will forward you the plugs and with them we will send you, free, a highly polished spark plug case and a spark plug wrench, complete with detachable handle. The case is handsomely finished, and fitted with recesses for four plugs. Keeps your "extras" handy and compact. The wrench is one of the most convenient tools you can have. These plugs are practically indestructible. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned. Made in all sizes and in types to suit every car, motor cycle, motor truck, motor boat, aeroplane, tractor and stationary gasoline engine.



When ordering, be sure to state size desired or name of engine.

SPLITDORF ELECTRICAL CO., Newark, N. J.

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You Can't Afford Cheap Piston Rings

PUTTING cheap piston rings in your motor is the poorest form of economy. What little you save in price is lost many times over in wasted fuel and oil and scored cylinders.

The piston rings that invariably prove cheapest in the end are the Genuine McQuay-Norris **Leak-Proof** Piston Rings.

In **Leak-Proof** you get the most perfect type of piston ring made. A special metal perfected for **Leak-Proof** Rings exclusively—strong, tough, enduringly elastic. A patented design, mechanically correct in every essential—giving the ring firm and equal bearing with light tension. Careful, accurate manufacture that works to hairbreadth measurements—insuring close fit.

For the **Leak-Proof** price you get good, strong compression, power a-plenty, little or no carbon trouble and lengthened gasoline and oil mileage.

BE CAREFUL. When you order **Leak-Proof** Rings, be sure you get them. Look for the name **Leak-Proof** stamped on every ring. Make sure the ring is made of two sections equal in size, fitting around one another angle to angle. That's the exclusive **Leak-Proof** design—vitally necessary to true **Leak-Proof** service.

All good supply houses, repair shops and marine stores have them in stock.

Send for FREE Booklet—"To Have and to Hold Power," the standard handbook on gas engine compression. It tells what **Leak-Proof** efficiency means. Write Dept. B.

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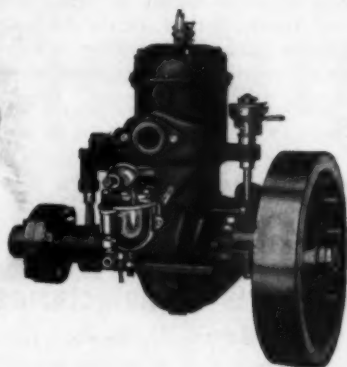


EAGLE MARINE ENGINES

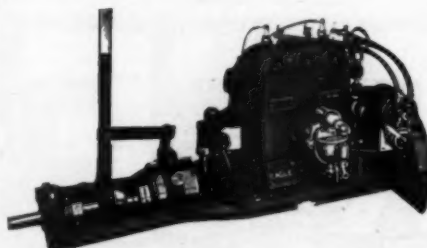
The popular priced line with excess power and excess value. You never had, and never will, purchase better value for your money than that offered you in every "EAGLE" Engine.

DO NOT PROCRASTINATE

1916 promises to demand more engines than there are facilities to produce. Manufacturers cannot purchase raw materials and deliver goods as promptly as in the past. There has been an evolution in business, resulting from enormous demands for all kinds of products, with the result that to go in the market today and attempt to secure supplies is almost impossible. Therefore, arrange for your engine requirements *early*, and be sure to arrange with a manufacturer who is likely to render you satisfactory service. You will find it more important than ever this year to use discrimination as to your source of supply.



It appears almost useless for us after 17 years of continuous national advertising and with a business record unsurpassed, to place our merits before you for consideration at this time, nevertheless there are a few of the better class dealers that we feel should be associated with us and selling the most complete and up-to-date line of 2-cycle engines on the market.



We have a large and varied line to choose from. Our popular-priced high-speed Models have no competition. They are in a class by themselves. They hold all records for speed and horsepower development and their construction is of surpassing quality.

Our Medium-Speed line of Engines is too well known to require any special mention. They have been a standard for 8 years, and the durability of this line is known all over the world, having shipped them to practically all foreign countries.

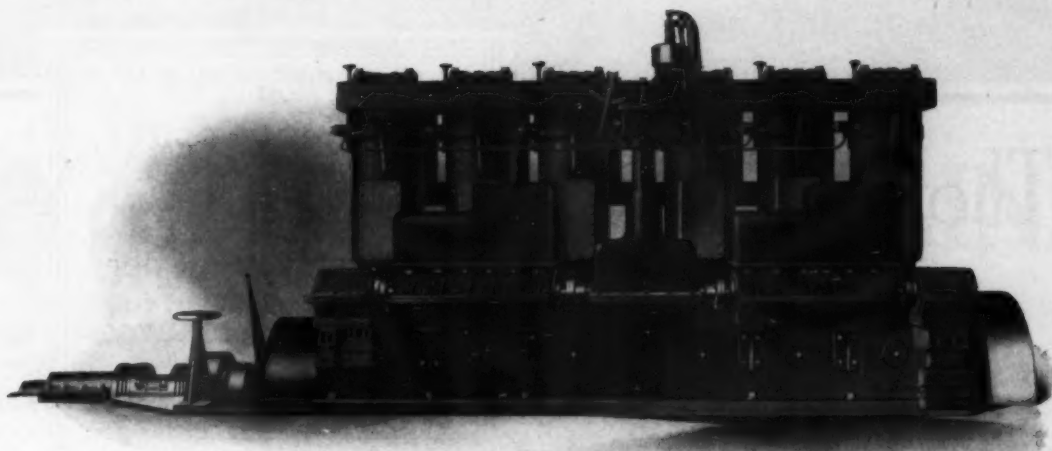
The Heavy Duty "EAGLE" Engine, for work boats and auxiliary purposes, cannot be improved upon. There are engines of this type in service that have been used continuously for 16 years, which is sufficient evidence of their value.

Therefore, we address ourselves to the live dealer, to the dealer who has an established business, who is sufficiently alert to grasp the importance of representing an established popular line and who realizes the importance and value of an association with an established house.

THE STANDARD CO., TORRINGTON, CONNECTICUT

The Winton Oil Engine

(Deisel Type)



120 to 1500 H. P. Heavy Duty Type. 4 Cycle. Direct Reversible.

The Winton Oil Engine follows no precedent, it is original and distinctive in its design and construction.

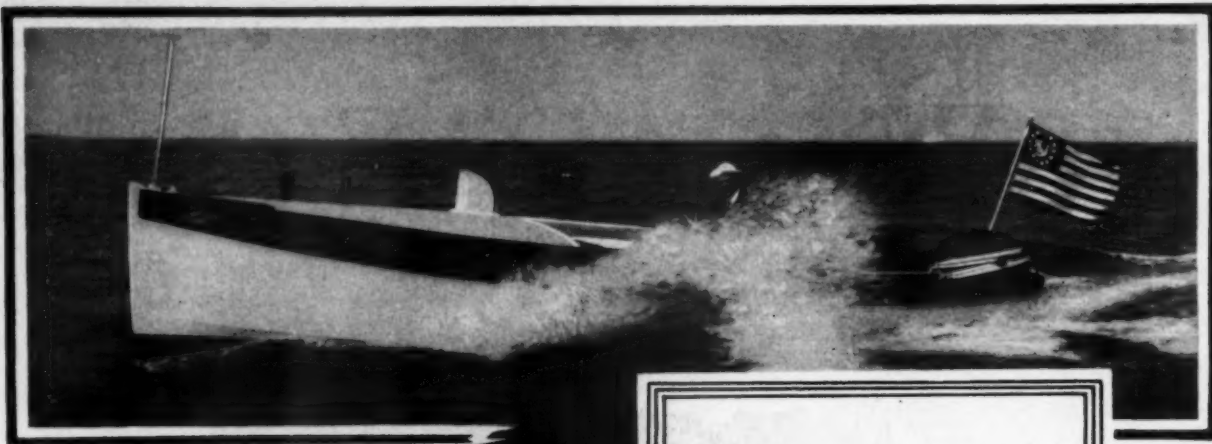
It represents the culmination of far reaching experiments to produce an Oil Engine of the utmost simplicity and reliability.

It is significant that contracts concluded prior to this our first public announcement aggregate in excess of 6000 H. P.

An advance bulletin is available to those who inquire.

WINTON ENGINE WORKS

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A Thousand Miles in the Open Sea

One more proof
that a Scripps Motor
will carry its owner
anywhere at any
time thru any sort
of weather.

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FROM: C. H. GILL JR.
DETROIT MI 7/24/16

JUL 26 1916

WAS ABLE TO TRAVEL PRACTICALLY CONTINUOUS FOG AND MOON
WINDS BEATING IN 72 HOURS ACTUAL RUNNING TIME. RAN DAY AND
NIGHT WITHOUT STOPPING DOWN AT TIDEWATER HARBOR MAINE.
RECEIVED 48 HOURS AFTER DEPARTURE REMAINING WITHIN 10
MILES OF THE COAST. DELAYED THREE HOURS DUE TO BRITISH
NAVY. FOG WITH SOUTHWEST GALE RECOMMENDED DELAY 48 HOURS TIDEWATER
HARBOR. NEW FROM TIDEWATER HARBOR TO DETROIT THROUGH CONTINUOUS
FOG AND STRONG SOUTHWEST WIND AND HEAVY RAIN SQUALLS. TIME
48 HOURS OF WHICH 40 WERE SPENT LAYING TO SEA UNDER 100 HOURS
OF FIFTY FIFTY MILES PER HOUR. TOTAL RUNNING TIME AT REDUCED
SPEED ON ACCOUNT OF FOG AND RAIN WAS 72 HOURS. ENGINE
PERFORMANCE ABSOLUTELY PERFECT. ABILITY TO STOP WITHOUT A
PICK UP FOG MORE CHARACTERISTIC AND START WITHOUT EFFORT A
RECORD. CARRIED 1000 POUNDS FUEL WATER PROVISIONS ANCHORS
EQUIPMENT AND CONSUMED 120 GALLONS GAS SIX GALLONS OIL START
BACK THURSDAY

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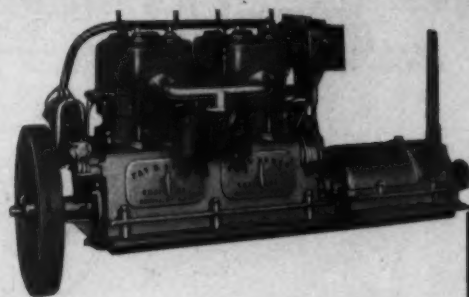
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ARRIVED LAST NIGHT FIFTY FIVE HOURS RUNNING TIME ENGINE
RECORD FOR ENDURANCE PERFECT SCORE

W. P. BOWELL
1022A

**SCRIPPS MOTOR
• • COMPANY • •**
631 Lincoln Ave
DETROIT MICHIGAN

"13" Lucky Number!



The Kendrick perpetual trophy was won today by William Frederick's Helma, of the United Club of Wilmington, she making the best time over the course.

Thirteen is evidently a lucky number for "Helma" and her

FAY & BOWEN ENGINE

In the cruiser race of August 19th, promoted by the Philadelphia Record, and covering 54 nautical miles, Helma proved "13" her lucky number by winning the Kendrick Trophy for making the best time of any of the thirteen entries.

But Mr. Wm. Frederick, of Wilmington, Helma's owner, is inclined to give more credit to his trim cruiser and her Fay & Bowen Engine than he does to the "hoodoo" number.

Helma is 40 ft. x 9½ ft. and is powered with a four-cylinder, four-cycle Fay & Bowen Engine of 30-45 H.P.

If you want a thoroughly GOOD engine, whether you prefer a two-cycle or four-cycle, you are safe in buying a Fay & Bowen. We also build complete power boats, independent electric lighting units, pumping sets, etc. "None Better Built."

Literature on request

FAY & BOWEN ENGINE COMPANY

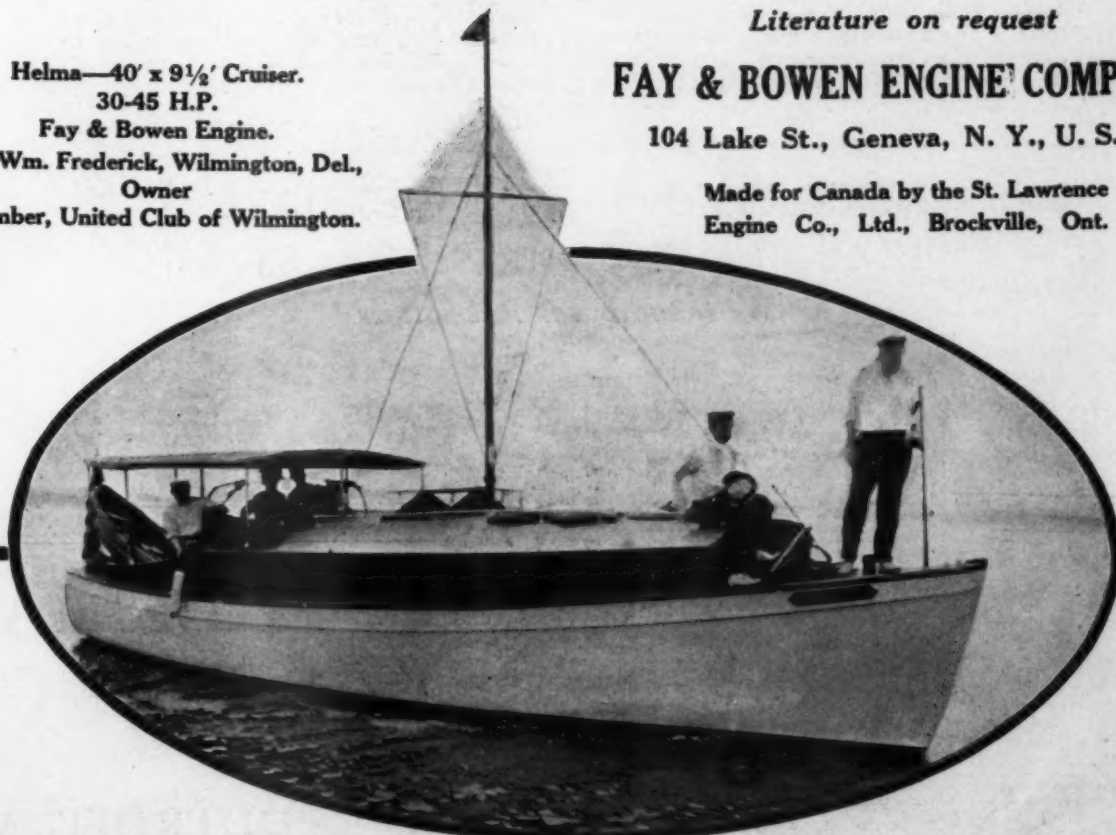
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Made for Canada by the St. Lawrence Engine Co., Ltd., Brockville, Ont.

Helma—40' x 9½' Cruiser.
30-45 H.P.

Fay & Bowen Engine.

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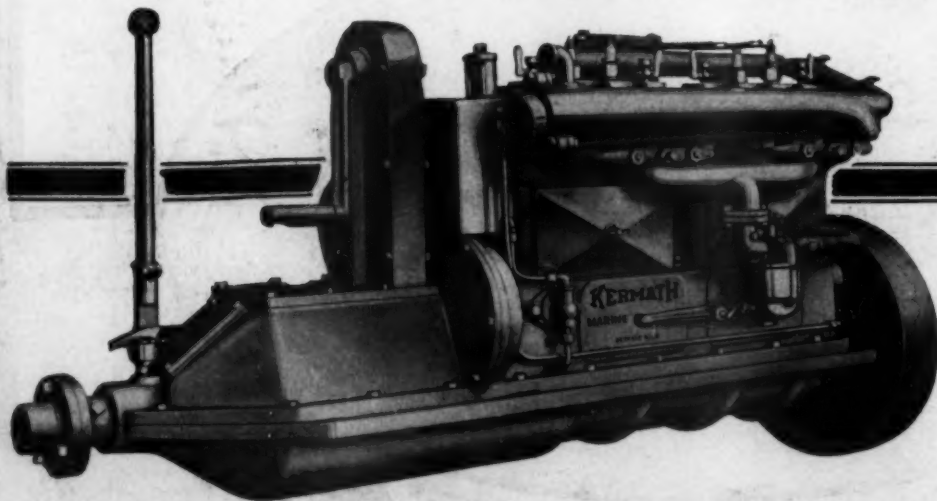
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